

VIBROPLEX
COLLECTOR'S GUIDE

BY
TOM FRENCH
W1IMQ

THIRD EDITION
WITH SUPPLEMENT

ARTIFAX BOOKS
STOW, MASSACHUSETTS USA

2006

Vibroplex Collector's Guide

third edition
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supplement
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SUPPLEMENT

The notes in this supplement to the third edition of the *Vibroplex Collector's Guide* include corrections and new information discovered since its publication. They are referenced to the page numbers in the book. If you are looking for information on a page, check back to this supplement to see whether it has been updated. This supplement also includes a reprint of a *Vail Correspondent* article which has been invaluable to collectors for dating Vibroplex keys.

PAGE 5, list of advertisements.

- Change page reference 111 to 106, and 113 to 108.

PAGE 12, Nameplates.

- The early A1 plate has serif-style lettering. Some collectors call this an A0 plate.
- According to collector Tony Rogozinski N7BG, there are two sizes of the Norcross plate: 11/16 x 2-½ inches, and 1-1/16 x 3 inches. Otherwise, they are similar.
- The D1 plate was introduced in 1920 (and all 1920 D1 plates were found on the Junior). See the note under Page 71.

PAGE 38, Original.

- According to telegraph historian John Casale W2NI, the Original was first publicly exhibited at the Railway Telegraph Superintendent's Convention in Chattanooga, Tennessee, on May 17, 1905.

PAGE 39, Original: Collectibles and Oddities.

- According to collector Martin Odenbach DK4XL, the T-bar style damper was used on the Original (and on the Blue Racer) in the 74xxx to 78xxx serial number range (1920).

PAGE 46, Double Lever.

- The plate types used prior to 1910 were Norcross or Atlanta.
- Regarding the frames on New York Double Levers: The square frame was first; these had B1 - B4 nameplates. The cloverleaf frame had B4 - D3 plates.
- Regarding the circuit closer type: The situation is a bit confused but it seems that the center pivot type is found on early B1 plate Double Levers, and the end pivot type is found on later B1 to D3 Double Levers.
- From the above, a B1 plate bug can have either type closing lever; a B4 bug can have either type frame.

PAGE 48, Model X.

- An example of the duplex contact key shown in patent 1,042,457 at page 50 was discovered (on Ebay) in early 2004 by collectors Martin Odenbach DK4XL and Randy Cole KN6W. This key, now in the collection of Randy Cole, carries a B2 nameplate and the serial number 1036 on the hot terminal connector strip. It has two separate contact posts instead of the "U" shaped contact holder shown in the patent drawing. The model (now called by collectors the "Patent 457" Vibroplex) was the subject of an article by

John Casale W2NI (AWA *Old Timer's Bulletin*, May 2004, p. 40). Horace Martin is quoted in the article as saying that about 100 of the keys were made.

PAGE 56, Albright Bugs.

- A web page on these bugs, with known serial numbers, is on the internet at artifaxbooks.com/albright.htm

PAGE 59, No. 4, Blue Racer.

- The early Blue Racers have a square shaped pivot frame. Later ones (beginning about 1919) have the cloverleaf frame.
- Some Blue Racers in the range 74xxx to 77xxx have the T style damper, although most in this range have the usual "U" damper (per Martin Odenbach DK4XL).

PAGE 61, Upright.

- Twenty-three Uprights (in several variations of features) are known, according to data collected by Lynn Burlingame N7CFO and Martin Odenbach DK4XL. They are in the 59xxx to 68xxx serial number range (1917 - 1919).

PAGE 67, Midget.

- According to Martin Odenbach DX4XL, six Midgets are known to exist, with a possible seventh remaining to be verified.

PAGE 71, Martin Junior.

- A study of serial numbers by Fred Maas KT5X shows the "Original on a smaller base" was made from 1920 to 1922. All have a D1 plate. (A few later exceptions carry D2 and D3 plates.) Then the "Martin Junior" appeared from 1935 to 1938, all with D3 plates.

PAGE 96, Collectible Keys and Accessories.

- Six Midgets are known, and twenty-three Uprights. The scarcest model is Patent 457.

PAGE 103, Appendix C: Nameplate legends.

- The early A1 plate has serif-style lettering. Some collectors call this an A0 plate.
- There are two sizes of the Norcross plate: 11/16 x 2-½ inches, and 1-1/16 x 3 inches. Otherwise, they are similar. See note for Page 12.
- The B2 plate also occurs on the 457 patent model (one known).

PAGE 106, Appendix D, Base Finishes.

- The first finish (found on the earliest Originals), is nickel plate.
- A serial number study by Martin Odenbach DK4XL suggests that the optional colored base bugs were made in two batches between July 1931 and November 1932 (with the usual black-based bugs in between), although they were advertised for years.
- A "leatherette" painted finish was available (according to serial number dating) in the late 'teens and early 'twenties, and was discontinued about 1923.
- At least three dark maroon based Originals, marked "Western Union" over the paint, are known. These date to 1923 (one seen on Ebay dated to 1922).

PAGE 111, Double Lever.

- First note: Martin Odenbach DK4XL lists 98098 as the last known Double Lever.
- Second note: The Norcross serial number is 6010.

The "bible" of Vibroplex production dates is John Elwood's WW7P *Birth Dates of the Vibroplex Keys*, published in the January 1997 issue of *The Vail Correspondent*. Because it is so relied upon by collectors, conflicts in dating information have been resolved in favor of serial number dates according to John's list. This is why, for example, 1920 is accepted as the introduction of the D1 plate and the Martin Junior.

Here follows a reprint of the original article from *The Vail Correspondent*.

the Vail Correspondent

No. 18

January 1997

the quarterly journal for telegraph instrument collectors

in this issue:

WW7P's VIBROPLEX DATING GUIDE



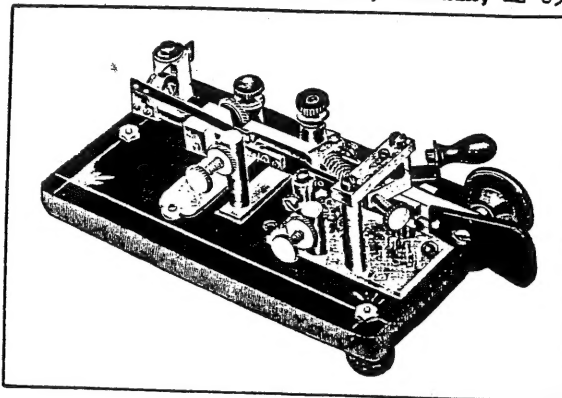
The First VIBROPLEX Nameplate

the Vail Correspondent

BIRTH DATES OF THE VIBROPLEX KEYS

© 1996

by John Elwood, WW7P, 5716 N. 34th Dr., Phoenix, AZ 85017 USA



As a key collector I have been asked many times to date Vibroplex keys. At first it appeared nearly impossible to do, so I decided to undertake a project that would help us know how old and when our keys were made. It's been a long job starting in 1990.

I'll start with serial numbers and approximate dates, then list the sources for my dates, such as when the keys were first/and last advertised, patent dates, sales slips, Vibroplex's addresses over the years, information from owners, etc.

After the above dates had been ascertained, other dates were determined by extrapolation of the figures.

Remember, these are approximate dates but I feel they are very close.

It appears that Vibroplex assigned blocks of numbers for different models of keys between 1905 and 1915.

<u>KEY</u>	<u>SERIAL NUMBERS</u>
ORIGINAL	400-4416
DOUBLE LEVER	6010-6014
DOUBLE LEVER	D5015-D5310
ORIGINAL	9000-9,999
"X"	10,238-12,250
No. 4	B518-B1623
ORIGINAL	20,011-20,788
"X"	25,090-26,154

<u>KEY</u>	<u>SERIAL NUMBERS</u>
ORIGINAL	50,000-51,814

With the 253 Broadway address and later plates the serial numbers ran consecutively.

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Commas have been inserted to facilitate reading the numbers.

<u>NUMBER</u>	<u>APROX. YR</u>	<u>NUMBER</u>	<u>APROX. YR</u>
400-1,286	1905	84,682-88,402	1922
1,287-2,777	1906	88,403-91,375	1923
2,778-3,255	1907	91,376-94,316	1924
3,256-6,106	1908	94,317-95,865	1925
No numbers reported between		95,866-99,574	1926
6,107-9,999		99,575, 101,339	1927
No numbers reported	1909	101,340-103,104	1928
No numbers reported	1910	103,105-103,952	1929
10,000-10,399	1911	103,953-104,800	1930
10,400-11,766	1912	104,801-105,648	1931
* 20,000-20,621		105,649-106,496	1932
11,767-12,250	1913	106,497-107,344	1933
* 20,622-20,800		107,345-108,192	1934
25,000-25,577		108,193-109,040	1935
** 50,000-50,907		109,041-109,888	1936
D5015-D5310		109,889-110,736	1937
25,578-26,154	1914	110,737-111,571	1938
** 50,908-51,827		111,572-113,865	1939
B518-B1623		113,866-116,159	1940
* No numbers reported		116,160-118,452	1941
12,251-19,999		118,453-122,536	1942
** No numbers reported		122,537-126,619	1943
26,155-49,999		126,620-137,394	1944
51,828-54,231	1915	137,395-148,169	1945
54,232-57,268	1916	148,170-152,526	1946
57,269-60,308	1917	152,527-156,883	1947
60,309-64, 573	1918	156,884-161,353	1948
64,574-72,352	1919	161,354-165,822	1949
72,353-80,960	1920	165,823-170,292	1950
80,961-84,681	1921		

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<u>NUMBER</u>	<u>APROX. YR.</u>	<u>NUMBER</u>	<u>APROX. YR.</u>
170,293-174,762	1951	Portland, Maine	
174,763-179,232	1952	386,952-391-230	1979
179,233-183,702	1953	4,003-4,955	
183,703-188,172	1954	5,261-5,921	1980
188,173-192,642	1955	40,000-40,787	
192,643-197,112	1956	40,788-42,077	1981
197,113,201,582	1957	Assorted nos.	1982 through
201,583-206,052	1958	42,078-49,762	1984
206,053-210,517	1959	01,185-01,671	1983
210,518-217,034	1960	01,672-02,158	1984
217,035-223,551	1961	49,763-51,710	1985
223,552-230,068	1962	02,159-02,645	
230,069-236,585	1963	51,711-54,163	1986
236,586-240,870	1964	02,646-03,132	
240,871-245,155	1965	54,164-55,911	1987
245,156-249,440	1966	03,133-03,619	
249,441-253,725	1967	55,912-60,077	
253,726-258,010	1968	No numbers re- ported	
258,011-263,874	1969	60,078-61,963	1988
263,875-266,151	1970	03,620-04,106	
266,152-267,328	1971	61,964-62,254	1989
267,329-270,152	1972	04,107-04,337	
270,153-272,975	1973	62,255-65,764	1990
272,976-373,006		04,338-05,334	
Only two num- bers reported		65,765-67,132	1991
373,007-375,415	1974	05,335-06,439	
375,416-378,752	1975	67,133-69,068	1992
378,753-382,089	1976	06,440-07,725	
382,090-385,426	1977	69,069-70,410	1993
385,427-386,951	1978	07,726-07,896	
		70,411-70,778	1994
		07,897-08,205	
		70,779-80,361	
		No numbers reported	
		80,362-80,870	1995
		08,206-08,514	
		Portland, ME & Mobile, AL	

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<u>NUMBER</u>	<u>APROX. YR.</u>	<u>NUMBER</u>	<u>APROX. YR.</u>
80,871-100,499		100,500-	1995 (Continued)
No numbers reported			

<u>KEY</u>	<u>START DATE/SOURCE</u>	<u>STOP DATE/SOURCE</u>
ORIGINAL	June 1905 "The Commercial Telegraphers' Journal", June 1905, Pg. 32	Still in production
Double Lever	Jul 1907-Aug. 1908 Nameplate from WD6DTC key	Feb. 1925 "The Railroad Telegrapher", Feb. 1925, Pg. 32
"X"	Dec. 1911 "The Railroad Telegrapher", Dec. 1911, Pg. 376a	Jan. 1923 "The Railroad Telegrapher", Jan. 1923, Pg. 6
No. 4/ Blue Racer	Aug. 1914 "Journal of the Telegraph", Aug. 1914, Pg. 15	Dec. 1966 Harrison Ad. "QST", Dec. 1966, Pg. 170
Upright	Nov. 1917 "Electrical Experimenter", Pg. 458	Feb. 1919 "Telegraph and Telephone Age", Feb. 1919, Pg. ii
Midget	Oct. 1918 "The Railroad Telegrapher", Oct. 1918, Pg. 268	Sep. 1920 "The Railroad Telegrapher", Sep. 1920, Pg. 358
Martin Junior	c. Jul/Aug 1920 WW7P Survey	Oct. 1939 "QST", Oct. 1939, Pg. 106
No. 6/ Lightning	June 1927 "The Railroad Telegrapher", June 1927, Pg. 126	Nov. 1980 Tufts Ad. "73" Magazine, Nov. 1980, Pg. 163
Champion	Nov. 1939 "QST", Nov. 1939, Pg. 114	Nov. 1980 Tufts Ad. "73" Magazine, Nov. 1980, Pg. 163
Zephyr	Jan. 1939 U.S. Pat. 2,187,351 shows a Zephyr. Filed 1/9/39	1958 WW7P Survey. Last Zephyr s/n: 201, 928
Presentation	Nov. 1948 "QST", Nov. 1948, Pg. 138	Still in production
Vibro-Keyer	Jan. 1960 "QST", Jan. 1960, Pg. 140	Still in production
Iambic	Dec. 1979 "QST", Dec. 1979, Pg. 212	Still in production
Brass Racer-Iambic	Nov. 1982 "QST", Nov. 1982, Pg. 162	Still in production

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<u>KEY</u>	<u>START DATE/SOURCE</u>	<u>STOP DATE/SOURCE</u>
Brass Racer- EK-1	Nov. 1982 "QST", Nov. 1982, Pg. 162	Still in production
<u>Straight Key-Nov. 1996/"QST", Nov. 1996, Pg. 201 Still in production</u>		

Most recent
Pat. date or
Latest Pat.
Number

Date Range

Aug. 9, 1904 767,303	Aug. 9, 1904 - Apr. 15, 1906
Aug. 9, 1904 Others pending	Apr. 16, 1906 - Jan. 21, 1907
Jan 22, 07 842,154	Jan. 22, 1907 - Jun. 30, 1911
Jan 22, 07 Others pending 842,154 Others pending	Oct. 27, 1911 - Nov. 4, 1912
Nov. 5, 1912 1,043,449	Nov. 5, 1912 - Aug. 3, 1917
1,043,449 Others pending	Aug. 4, 1917 - Mar. 18, 1918
1,178,291 (Boulter)	Aprox. 1918 & 1919 WW7P Survey
1,260,008	Mar. 19, 1918 - Jul. 1920 (Start of 825 Broadway address)
<u>Vertical Nos.</u>	(On later keys with the Bug logo)
763,303	At top of list is wrong. This patent is for a clip issued to Joseph A. Mayers, June 21, 1904. Correct number should have been 767,303 issued to Horace G. Martin, August 9, 1904
1,260,008	825 Broadway. Jul. 1920 - Feb. 12, 1923. "The Railroad Telegrapher", Jul. 20, 1920, Pg. 274
1,445,226	This patent number preceeded 1,260,008 plus other patents pending on Vibroplex keys. 825 Broadway. Feb. 13, 1923 (U.S. Pat. date) - Feb. 12, 1925 ----- 796 Fulton. Feb. 13, 1925 - Jan. 8, 1939 "QST", Apr. 1925, Pg. 76 (Minus 2 mos for ad to be submitted)

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Vertical Nos. Date Range

Magazine ads for period Jun. 1925 - Apr. 1941 shows address as either:

825 Broadway

or

832 Broadway

however, all keys for this period are marked:
796 Fulton St.

1,260,008 796 Fulton St. Jan. 9, 1939 - 3-26-42 (Date on J-36 key)
Other pats
pending -----

833 Broadway 3-27-42 ---1945

"Patented" 1946 - 1963 WW7P Survey
833 Broad-
way

No Pat. Nos. 1963 - 1980 WW7P Survey. New company using up
No word Pat- 833 Broadway plates between Sep. 1979-
ened 1980.
833 Broad-
way

No Pat. Nos. 1980 - Aug. 1994 WW7P Survey
No word Pat-
ened
No street
address

<u>START/SOURCE</u>	<u>RED/GREEN/BLUE COLOR BASE</u>	<u>STOP/SOURCE</u>
Jun. 1929	"QST", Jun. 1929, Jul. 1936	"QST", Jul. 1936, Pg. 71

VIBROPLEX PATENTS

Only Vibroplex patents listed that appear as last patent number/or most recent date on the nameplate.

For a rough estimate of when your key was made, use that patent date and the next patent's filing date.

<u>Patent Number</u>	<u>Filing Date</u>	<u>Patent Date</u>
767,303	5/7/04	8/9/04
842,154	4/16/06	1/22/07
1,043,449	10/27/11	11/5/12
1,178,291	8/1/14	4/4/16
1,260,008	8/4/17	3/19/18
1,445,226	12/10/21	2/13/23

As I mentioned at the first of the article; this has been a lengthy project - well over six years, quite costly, data on over 3,135 Vibroplex keys and the aid of nearly 2,000 owners.

the Vail Correspondent

I want to say a special thank you to my wife, Edith, for all her help and patience over the years.

another who has been most helpful is Tom French, W1IMQ.

This article deals only with the dating of the keys. For much more information on Vibroplex keys such as pictures, identification, ads, patents, modifications within models, nameplate data, etc., I recommend you purchase Tom French's latest book "Vibroplex Collector's Guide", Revised Edition. Tom's address is:

P.O. Box 88
Maynard, MA 01754
U.S.A.

A most heartfelt thank you to the many who furnished data on your keys. The first draft of this article listed each of you but it ran two and a half pages - single spaced. I'm afraid no publisher would accept that, so this paragraph will show my appreciation for your fine cooperation.

Now, when someone asks how old your key is, you can say, "The birth date of my Vibroplex key is _____".



The latest Vibroplex nameplate.

THANKS TO...

The research necessary for this book could not have been accomplished without the help of many of my friends and fellow collectors. John Elwood, WW7P, deserves special mention for volunteering a constant flow of material on advertisements, dating and serial numbers, and for making his key collection available for photographing. Lynn Burlingame, N7CFO, generously contributed copies of many early full-page Vibroplex ads from his collection of *The Railroad Telegrapher*, several of which appear in this book. Dave Pennes, WA3LKN, submitted many photographs of his keys over the years. Randy Cole, KN6W, shared his insights and discoveries. Russ Kleinman, WA5Y, and Tony Rogozinski, N7BG, made their collections available for examination and photographing.

Going the extra mile, each of them contributed to my nameplate survey, as did Paul Bock, K4MSG; Derek Cohn, WB0TUA; Larry Nutting, K7KSW; Tom Perera, K2DCY; Murray Willer, VE3FRX; and Brad Wilson, KA1GDG. That information made possible not only the identification and dating of the nameplates, but several discoveries concerning the manufacture and serial numbering of the keys themselves.

My appreciation also to S. Felton "Mitch" Mitchell, Jr., WA4OSR, and the Vibroplex Company Inc. for their cooperation and encouragement during this project.

Finally, and always, to my wife, Carla, for her constant support during the years of collecting, research and writing that went into the production of this book.

Tom French,
W1IMQ.

Photo Credits

This list indicates the source (collection) of keys appearing in this book, and the photographer (photo). Uncredited photos were taken by me.

Page 10: (L) Dave Pennes WA3LKN collection/photo. (R) W1IMQ. Page 11: W1IMQ. Page 13: Dave Pennes WA3LKN collection/photo. Pages 14, 15: W1IMQ. Page 16: (L) John Elwood WW7P collection. (R) Warren Vance collection. Page 37: W1IMQ. Page 39: (T1, 2, 3, 4) W1IMQ. (B) Tony Rogozinski N7BG collection. Page 46: (L) Russ Kleinman collection. (R) John Elwood WW7P collection. Page 47: W1IMQ. Page 48: (L) Dave Pennes WA3LKN collection/photo. (R) John Elwood WW7P collection. Page 56: John Elwood WW7P collection; Ray Nelligan photo. Pages 57, 58, 59: W1IMQ. Page 60: (T) John Elwood WW7P collection. (B) Gil Schlehman K9WDY collection. Page 61: John Elwood WW7P collection. Page 67: John Elwood WW7P collection. Pages 69, 71: W1IMQ. Page 72: Tony Rogozinski N7BG collection. Page 73: (L) Tony Rogozinski N7BG collection. (R) Rob Mooney WD4JCB collection/photo. Pages 75, 79, 89, 90: W1IMQ. Page 91: (TL) Howell Babbitt W3IDO collection. (TR) Vibroplex Company collection. (B) W1IMQ. Page 92: Vibroplex Company collection; Joe Veras N4QB photo. Page 93: John Elwood WW7P collection; Ray Nelligan photo. Page 94: (T) Russ Kleinman WA5Y collection. (B) John Elwood WW7P collection; Ray Nelligan photo. Page 97: W1IMQ. Page 98: Vibroplex Company collection; Les Cox AA4F photo.

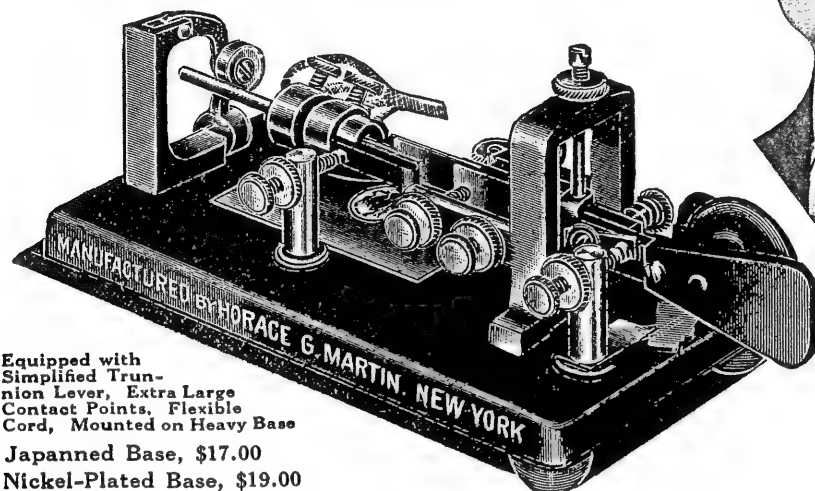
The Latest Improved

Genuine Single Lever

TRADE VIBROPLEX MARK

"Lightning Bug"

Embracing the Latest Improvements of Mr. Martin and Covered by U. S. Patent Letters No. 1445226 Recently Issued



Equipped with Simplified Trunnion Lever, Extra Large Contact Points, Flexible Cord, Mounted on Heavy Base
Japanned Base, \$17.00
Nickel-Plated Base, \$19.00



HORACE G. MARTIN
Inventor of the
Vibroplex
**1923
IMPROVED
MODEL**

Preference for this Machine Extends Everywhere

The pleasure and ease of sending with the Latest Improved 1923 Vibroplex have brought favorable comment from telegraphers everywhere.

Increased flexibility, wide range of speed, easy adjustment to suit varying wire conditions, absolutely firm contact, longer life and less strain on the operator, are other reasons for the pronounced preference being shown for this machine.

In this improved machine the lever mechanism is greatly simplified, but two parts being employed

to do the same work which in older machines requires six.

Place Your Order NOW

Get acquainted with the Latest Improved 1923 Vibroplex, without delay. Turn in your old Martin machine as part payment on this improved model. Liberal allowance. **ORDER NOW!**

Prompt Shipment. Money Order or Registered Mail.

Your name on machine in GOLD letters, \$1.50 extra.

Vibroplex No. 4 (Famous Blue Racer)

This model also is being equipped with the Simplified Trunnion Lever and Extra Large Contact Points.

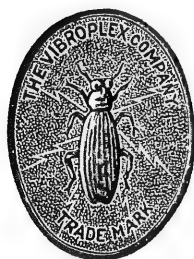
Japanned Base, \$17. Nickel-Plated Base, \$19.

Double Lever

Japanned Base\$17
Nickel-Plated Base.....\$19

Carrying Case

For safe keeping. Morocco-finished. Plush-lined. With lock and key, \$3.



Underwood Rebuilt Typewriters

Operator's Special ALL CAPITAL TYPE No 4 Rebuilt. Visible Writer and Guaranteed. For all practical purposes is as good as new. Light action and exceptional speed, \$40. With backspacer and two-color ribbon attachment, \$50.

Standard Typewriters (All Makes). Adding Machines, Check Writers and Protectors.

Distributors

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G. J. McCrum, 242 St. John Street, Portland, Maine

THE VIBROPLEX CO., Inc., 825 Broadway, NEW YORK

PHONES, Stuyvesant 4828, 4829, 6094

J. E. Albright, President, Member O. R. T. Grand Div'n Cert. 395

One of the few appearances of Horace G. Martin's likeness was in this July 1923 ad from *The Railroad Telegrapher*. The same illustration can be found in Company catalogs from the 1920's. Reference to the 1923 model is actually the 1921 Improved Vibroplex; the patent issued in 1923.

FOREWORD to the THIRD EDITION

The second edition of the *Vibroplex Collector's Guide* sold out some time ago, and I took this opportunity to correct a few statements and to make a few additions, based on new information gained over the past five years. One interesting change is the addition of a new nameplate, thanks to Randy Cole, KN6W. This "B" style plate fits between the B3 and B4 plates. We struggled with nomenclature and finally settled on calling it the B3x; see pages 12 and 104.

A few oddball variations of Vibroplex bugs have come to light in the past five years. For example, there is Tony Rogozinski's (N7BG) 1921 No. 4 (Blue Racer) on a Junior (3" wide) base. There is also the Original that uses some Improved Model X parts, a combination that Tom Perera (W1TP) calls the Pseudo-X. I have not included every such mutation; they are rare and were never advertised, and do not merit the space they would claim in this book. It is enough that the collector is aware that such curiosities exist.

Since the publication of the second edition, an important addition to our knowledge of Vibroplex keys was John Elwood's (WW7P) serial number dating guide, "Birth Dates of the Vibroplex Keys." This work, correlating serial numbers with year of manufacture, was published in *the Vail Correspondent*, no. 18 (January 1997). It is an article that I, and I'm sure most collectors, refer to often. As of this writing, back copies of VCG #18 are available from Artifax Books, and I recommend it to all Vibroplex collectors.

In order to keep the production costs of this edition within reasonable bounds, the five new variations and models produced by The Vibroplex Company since the publication of the second edition were not included. Collectors interested in these keys should contact the Company for a copy of their latest catalog. For your information, these keys are the Double Key (the Iambic paddle and the Straight Key on a common base), the Code Warrior Jr. (a small, magnetically tensioned paddle), the Blue Racer 2000 (an Original on a narrow, blue-painted base), the high-end Venus paddle, and the Code Mite (a tiny, light-weight straight key). It is also noted that the EK-1 paddle, the Brass Racer with the built-in keyer, seems to have ceased production in late 1999.

Vibroplex keys have been produced for almost a century. There are so many variations that, depending on which models you want, collecting them can be easy, or challenging. It is always enjoyable and interesting. So to the beginning collector and the seasoned specialist, good luck and happy hunting.

Tom French, W1IMQ
Stow, Mass.
October 2001

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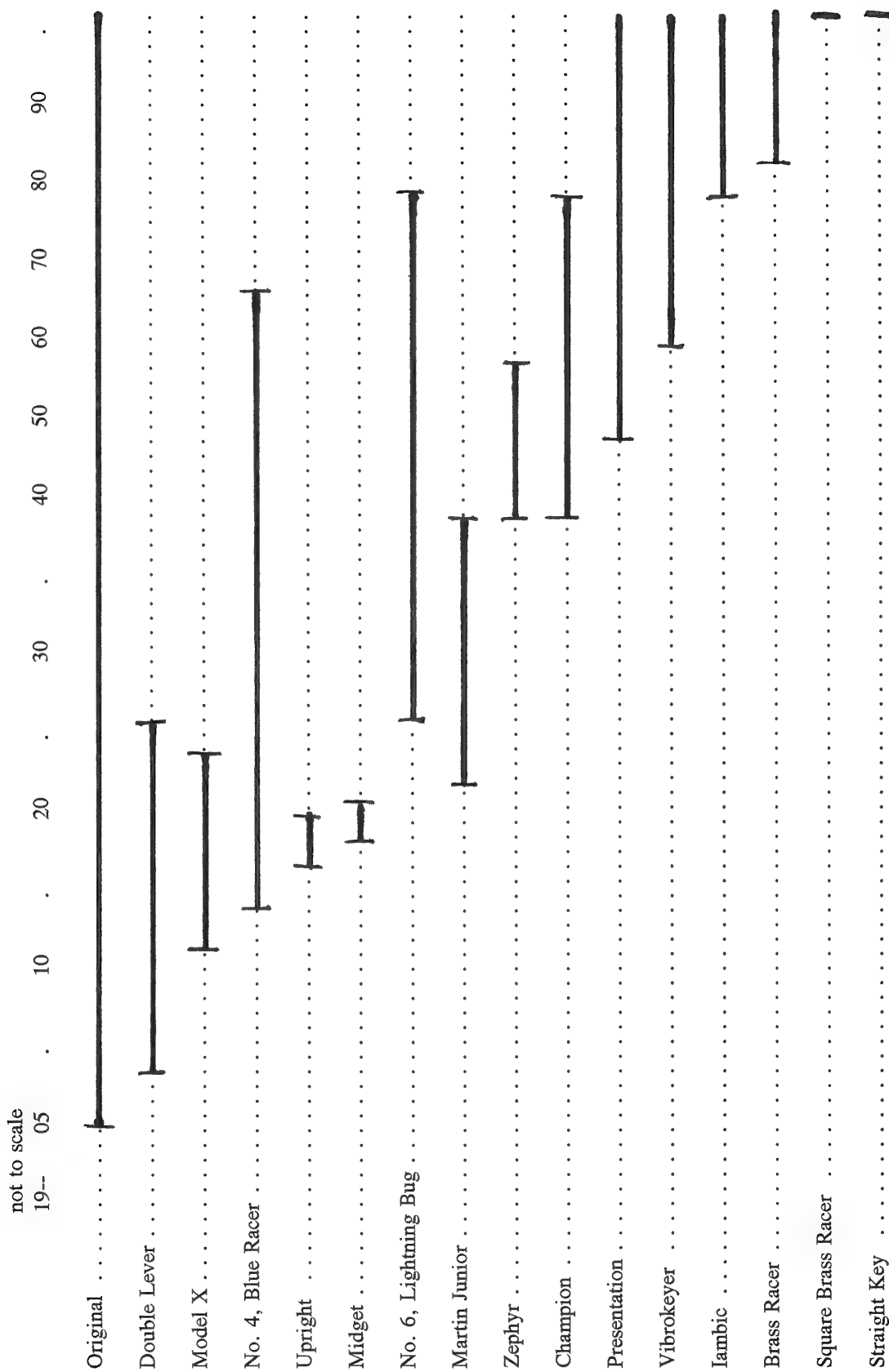
LIST OF MODELS

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* An Original on a "smaller base" appeared in 1921. This looks like, and collectors call it, a Martin Junior, but the Junior wasn't advertised as a separate model until 1934.

** The true Presentation, with the adjustable mainspring, ended in 1978.

VIBROPLEX MODEL VERSUS PRODUCTION YEARS



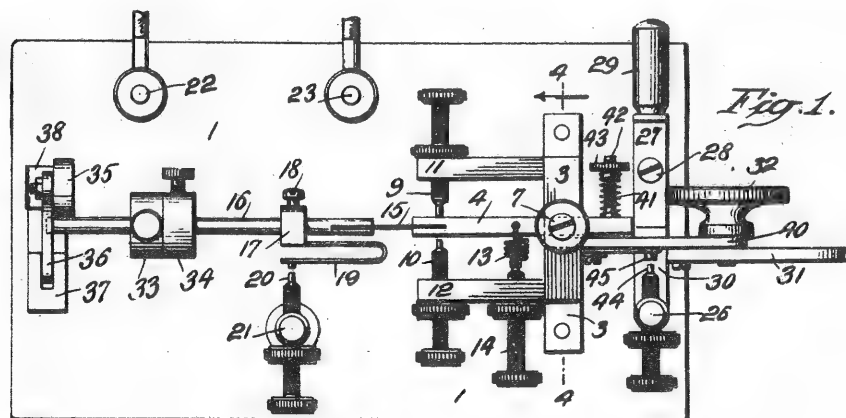
Parts of the Bug

Knowing how to refer to the various parts of your Vibroplex key is important when it comes to discussing them with other collectors. It is especially necessary in describing the several adjustments which have to be made so that it will operate properly. But the first term that raises questions isn't a part of the key, but refers to the key itself.

A manual **semi-automatic** telegraph key generates dots automatically. Dashes are generated individually by the operator. Horace Martin was the first to use the term "semi-automatic" in relation to such a key, doing so in his 1904 patent, no. 767,303. This type of key is also called a **bug** or **speed key**. The term "bug" originated with late 19th century commercial telegraph operators to denote an incompetent operator. Because operators would sometimes use the popular Vibroplex without sufficient practice before getting on the wire, the key was referred to as a bug's key; the term was eventually used to refer to the key itself.

The Vibroplex Company registered the word "Bug" as a trademark for its semi-automatic key, but this was voided in a court battle with J.E. Bunnell & Company in the late 1920's. The term has continued to be used by writers, collectors and other manufacturers as a generic reference to speed keys.

There is no standardization in the names of bug parts. Some names make sense; others don't. For those, I prefer a name that is at least descriptive of the part, or of its function. For reference, I will use the figure from Martin's 1923 "improvement" patent, no. 1,445,226.



Let's start with the **base** (1), upon which everything is assembled. The major component on the base is the **frame** (3). Martin also called this the standard, but frame is the more common term, used both by Martin in his patents and by the Vibroplex Company in its parts lists. The frame is the support for the **pivot screws** (7, 8), which may be plain or, in the De Luxe models, have jewel bearings.

The pivot screws hold what has been called the trunnion lever. This refers to the **main key lever** (4), which may also be called the **dot lever**, since it is moved to generate dots. "Trunnion" originates with the pivot (6), which may be called a trunnion, but it leads to calling the opposing adjustable screws (9, 10) trunnion screws. It is a strange and uncommon word, which has led both E.F. Johnson and Vibroplex to occasionally misspell it.

A trunnion is a pin or a pivot. The word is properly used to refer, for example, to the pins on which a cannon is adjusted for elevation. So instead of referring to a trunnion lever, I'll call it the **main lever** (or, sometimes, the **dot lever**, if that is more appropriate in context).

The frame also supports the main lever adjustments. Since the opposing adjustable screws on the frame arms (11, 12) involve no journals or pivots, I call the one on which the main lever rests (9) the **main lever rest screw**. The other (10) against which the main lever is thrown to impart motion to the pendulum, I call the **main lever stop screw**.

Whereas the main lever (4) is moved to generate dot, the **dash lever** (40) is independently movable to make dashes. I think these names are less confusing than Martin's. He has called the main lever the "key-lever," and the dash lever the "outer part of the key-lever."

As for the weighted dot-generating rod (16), this has been called a **vibrator** or **pendulum**. Sometimes it has been called an arm. I like pendulum, for the clock-like regularity it implies. The pendulum carries the U-shaped dot-contact spring (19), and attaches to the main lever by the **mainspring** (15).

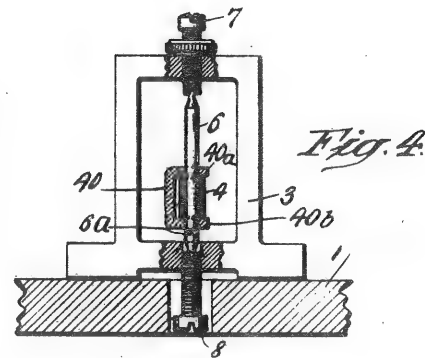
The pendulum **dampener** (35-38) is an assembly of several parts. In the Original it commonly consists of a support (37) that carries a pivoted arm (36). The arm terminates in a weight (38), and a **wheel** (35; sometimes called button) is loosely carried on the arm. On early Vibroplex models, a screw stop (39) positions the damper weight.

Various dampers appear on the Vibroplex keys. The Zephyr, for example, has the damper wheel held by a simple sheet-metal bracket. The several types of dampers are discussed in the next chapter.

The frame, carrying the levers and pendulum, and the damper comprise most of a bug, and include all of its movable parts. Note that the frame with its attached parts can be removed from the base by simply removing two screws under the base. This is handy for, say, a quick washing and cleaning of a chrome De Luxe base.

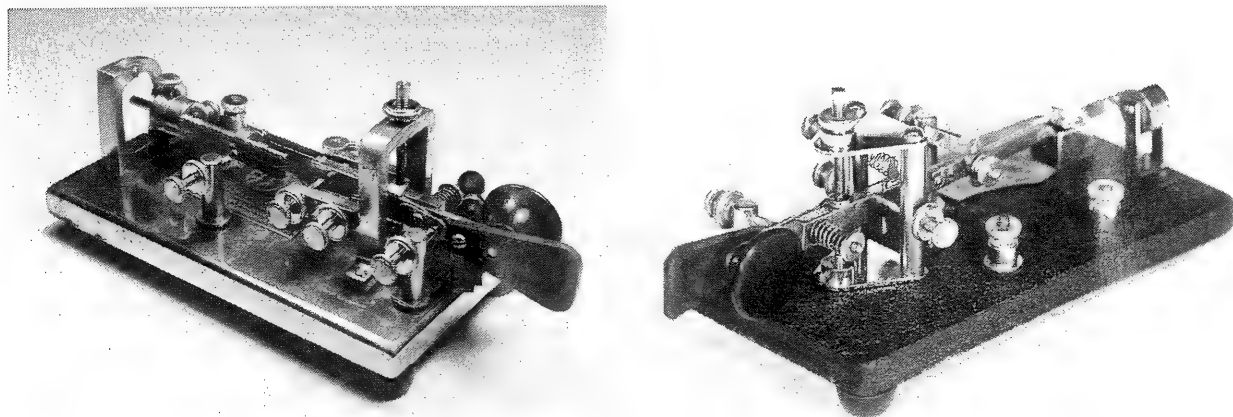
Now back to the operating end of the bug. Hand keys have a knob, but Vibroplex bugs have pieces. There is the paddle-shaped **thumb piece** (31), and the knob-shaped **finger piece** (32). But it is common usage to refer to the items as a **paddle** and a **knob**, respectively.

Those are the main parts of a bug. There are many other smaller parts identified in the patents, but you will hardly have occasion to refer to them. Until, of course, you buy a bug at a flea market and find one odd part missing. Then you can tell your friends you need "that thinga-ma-jig that holds the whatsis."



Identification of the Models

Certain models in the Vibroplex family are easily identified. These are the Upright (or Vertical), Midget, Double Lever and the Model X. Each of these looks quite unlike any other model. The illustrations in the chapters devoted to these models show their many unique features. But there are six models that in one respect or another are rather similar. They are all flat-based, split-lever bugs. These six are the Original, No. 4 (Blue Racer), No. 6 (Lightning Bug), Martin Junior, Zephyr and Champion. (There is also the Presentation, at one time a separate model, but which today is considered merely a variation of the Original.) These bugs are usually differentiated by their base size (there are three widths), damper style (five) and frame design (one-piece or assembled).



Left, one-piece (cast) frame on Original. Right, assembled frame on Champion.

The pre-WWII No. 4 Blue Racer (and the larger-framed late Double Lever) used a “cloverleaf” style frame. The interior cut-out of these frames is quatrefoil in shape, and is interesting on this account. But for our immediate purposes the No. 4 frame will be categorized together with the more typical one-piece cast frames.

The various damper styles may be recalled by the mnemonic MULTI, each style being represented by, and looking roughly like, one of those letters. The actual shape of the L-type damper varied over the years. At first, it was quite rectangular, with sharp, squared-off corners and edges. Around 1915 it acquired a curious “flat-topped” shape (see the chapter on the Original), and finally in the early 1940's it became the modern curved or “hooded” style we are now so familiar with.

The “M” and “U” damper styles were each used on only one model. The “I” was used on two, and the “L” on three. Of the six bugs we will differentiate here, the “T” damper is only rarely found on the Original model; it is always found on the Model X (a crude version being used on the later “improved” Model X), and sometimes on the Double Lever.

A list of the six models and their characteristics appears on the following page. The base size widths are a nominal measurement, for comparison. As we will see in later chapters, the 3.5" base was an option for the early No. 4 Blue Racer, and the Original was at one time

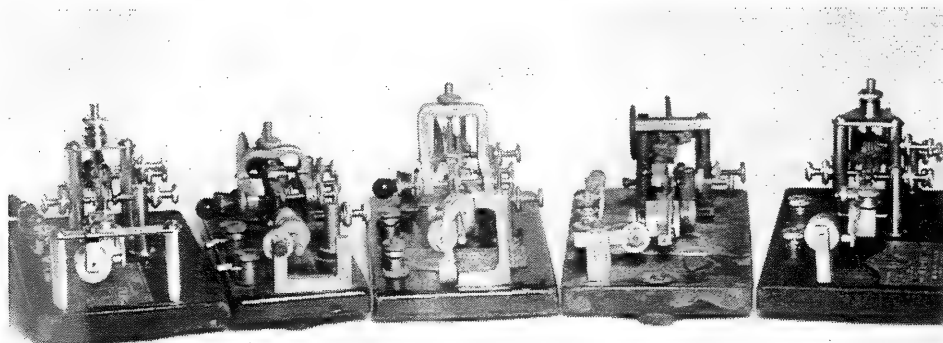
available with an optional 3" wide base (and was, in effect, a Martin Junior). But the typical form of the "look-alike" models will have these features:

model	base width	frame	damper
Original	3.5"	one piece	L (rarely, T)
No. 6 Lightning bug	3.5	assembled	M
Champion	3.5	assembled	I
Martin Junior	3.0	one piece	L
Zephyr	3.0	assembled	I
No. 4 Blue Racer	2.5 *	one piece	U; L on late ones

The list refers to differentiating the five "look-alike" bugs only. For example, just because a bug has the T-style damper doesn't mean it is an Original; this damper was also used on the Double Lever and the Model X.

** The "old-style base" (3.5") was an early option for the No. 4.*

In working your way through a hamfest in search of keys, you may be tempted to make a speedy identification by looking at only one or two features of the key. This is natural, but, as we all learn sooner or later, it leads to mistakes. Check and double-check each bug you see. It



The five damper styles. Left to right, M, U, L, T and I.

is too easy to mistake one model for another. I've mistakenly taken a Martin Junior to be an Original. Other experienced collectors have identified a Zephyr as a Champion. (Besides the difference in base width, the Zephyr has a circuit closer switch, while the Champion does not.) It's interesting that in these actual examples, a scarcer model was mis-identified as a more common bug. Don't let this happen to you.

Vibroplex Nameplates

type	legend or identifier	introduced
Style A: notched corners: three types		
A1	4 lines, second reads "patented Aug 9 1904"	1905
A2	5 lines, 2 pat. nos. plus "others pending"	1906
A3	5 lines, 3 pat. nos. plus "others pending"	1907
The Georgia plates: two types		
Norcross	5 lines, 3 pat. nos. on third line	1907
Atlanta	4 lines: The Vibroplex/mfd by/MMC/Atlanta Ga	1908
Style B: rounded ends: four types		
B1	4 lines: The Vibroplex/mfd by/HGM/New York	1910
B2	5 lines: The Vibroplex/trade mark/mfd by/HGM/New York	1911
B3	5 lines: 3 pat. dates plus "others pending"	1912
B3x	6 lines: 84356 Nov 28 1911 plus 5 pat. dates	1913
B4	6 lines: 84356 Nov 28 1911 plus 4 pat. dates	1913
Style C: The 253 Broadway plates: three types		
C1	square corners out/in 5 pat. nos., last # 1043449	1916
C2	fancy cnrs out/in 10 pat. nos., last # 1178291	1917
C3	square out, fancy in 6 pat. nos., last # 1260008	1919
Style D: The "Bug" plates: nine types		
D1	825 Broadway 6 patents (last 1260008)	1921
D2	825 Broadway 7 patents (last 1445226)	1923
D3	796 Fulton St 7 patents (last 1445226)	1926
D4	796 Fulton St 6 patents, "other patents pending"	1939
D5	833 Broadway 6 patents, "other pats pending"	1941
D6	833 Broadway "patented" (no numbers)	1946
D7	833 Broadway no patent data	1963
D8	no address (Maine) no patent data	1979
D9	Mobile, AL no patent data	1995

This chart lists the twenty-two different types of commercial Vibroplex metal nameplates. The chart does not include the plates used on the U.S. Signal Corps J-36 keys, nor does it include the metalized plastic name sticker found on the bottom of the triangular Brass Racer keys. See appendix C for the complete nameplate legends.

Nameplates, Serial Numbers and Decals

Nameplates are found on all Vibroplex keys, serial numbers on most, and decals on a few. The presence of these items can add interest to an otherwise ordinary model.

Nameplates

There are twenty-two different types, or variations, of metal nameplates which have been used on the commercial keys. As an aid in discussing and listing the types, I gave alphanumeric identifiers to the plates found on the commercial keys manufactured in New York, Maine and Alabama.

The Georgia and the military plates are so distinctive that they do not require separate identifiers. Martin's (and United Electrical Mfg. Co.'s) brief trip to Georgia resulted in two plates which can be immediately dated and type-identified by the municipality named on the plate: "Norcross" (U.E.M., 1907-1908) or "Atlanta" (Martin Manufacturing Co., 1908-1910).

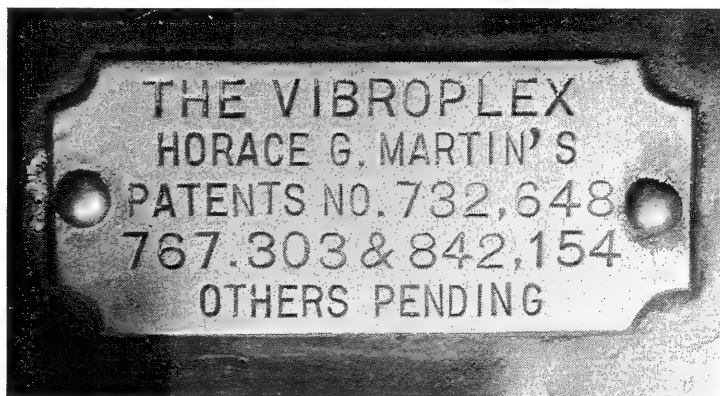
The Signal Corps J-36 nameplates are unique to the military bugs. There are at least three variations, which differ by print size and, of course, order number and date. These plates are discussed in the chapter on military keys.

The only key on which such a metal plate will not be found is the triangular Brass Racer (both the Iambic and EK-1 models); it has insufficient topside

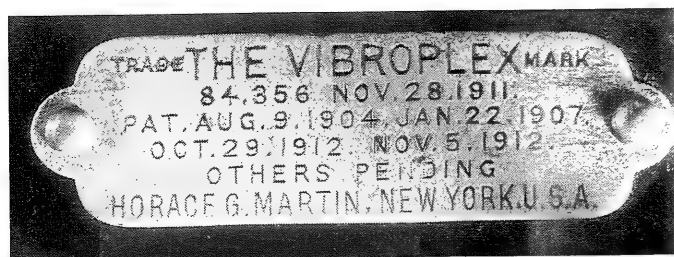
area on which to mount a plate, so a metalized sticker is attached to the bottom of the base. (See the chapter on the Brass Racer.) The new "Square Brass Racer" is large enough to accommodate the metal bug-type plate on top of the base.

The nameplates used in New York, Maine and Alabama are described by their four shapes, or styles, and are further broken down into distinct types according to the patent and address data on the plate. Two or three items of information (style and patents, plus, for the "D" plates, street address) are sufficient to isolate one plate from among all others used in New York, Maine and Mobile.

Each of the plate styles or shapes (A, B, C and D) is shown here, and every type is identified in the accompanying chart. For your reference, Appendix C: Nameplate Legends, gives the complete patent and address information found on each of the plates. Once some familiarity with the plates is gained, particularly the styles or shapes, the abbreviated information in the chart will be sufficient to identify a particular plate.



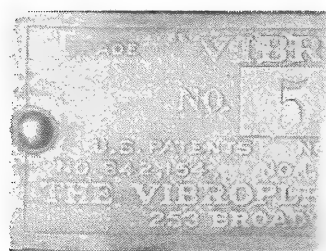
Style A plate (type A3).



Style B plate (type B4).

first to state that Vibroplex is a “trade mark” of the Company. Plates B3x and B4 are the “trademark registration plates”; the number 84,356 which appears on these plates is the 1911 registration number for the trademarked term “Vibroplex.”

The street address, serial number and “The Vibroplex Company Inc.” appear for the first time on the style C plates. These three rectangular plates with centered serial number differ in the corner design details. C1 is the plainest of the three. C2 is a fancy-cornered plate. C3 might be confused with C1, but note the inner corner design on C3, below right. (“Out” in the chart refers to the outer metal corner, while “In” refers to the painted inner corner design.) Plates C1 and C2 are brass; plate C3 looks like it is made of aluminum. Plate C2 is the only Vibroplex plate to carry any of the patents of Royal Boulter and acquired by the Vibroplex Company, and it carries all five of them (in addition to five of the Company’s own patents).



Style C: left to right, type C1, C2, C3.

There are errors and anomalies. The first patent number is incorrectly given as 763303 on plates D1 through D5; it should be 767303. The Norcross plate also has an error on it; the third patent number of 342154 should be 842154. (See Appendix C.) And the D2 plate is the only D-style plate which has been sometimes found mounted transversely across the base (left to right) of a bug, facing the operator.

Serial Numbers

Not all Vibroplex bugs carry a serial number. At least one 1905 Vibroplex is known that does not have a number; this suggests the possibility that Martin decided to number his keys only after he had produced a few. Thereafter, the keys were serially numbered up to the Norcross bugs, when the numbers became erratic. One Norcross key has no number; of the two known Atlanta keys, one has no number, while the other has a seemingly random number. It seems as

though Martin was re-thinking his use of numbers. In fact, the keys made immediately after Martin's return to New York (B1 plate) are not numbered. (Note that the Atlanta and B1-plate keys are all Double-Lever keys.) Thereafter, the keys are again numbered.

When they are numbered, very early Originals are stamped on the right side of the base; later, the damper was stamped (or, for the model X, the metal connector strip which runs from the hot connector terminal to the stationary dot contact). All of the style C and following plates carry the number on the plate.

As for dating by serial number, it has been said that a fire in the nineteen-forties destroyed many Vibroplex Company records. And when the Company was sold in 1978, the sellers saved the buyer the trouble of transporting the old records to Maine: They sent them to the dump!

Did it matter? The late telegraph historian Louise Moreau, W3WRE, wrote, "It is not too good to use the serial number to check dates because there was a habit of changing them with every model." But later studies suggested that the situation wasn't

quite as bad as Moreau claimed. There was a brief period of special numbering for the Double Lever (D-series numbers) and the No. 4 (B-series numbers), and there are gaps in the numbering sequence during this B4-plate era which correspond to production changeovers from one model to another. The Double Lever and the No. 4 models were eventually given numbers from the usual sequential series, and in the main, the numbers used since 1915 are serial.

But when James Albright took over and incorporated the Company in 1915, he jumped numbers on the B4 plate, and began with 50000. The numbers eventually reached almost 400000 in 1978. More recently, when Peter Garsoe began numbering his no-address Maine (D8) plates in 1979, he dropped back to the 4000 range of numbers for a brief period, then jumped to the 40000 range to begin again. In addition, when he came out with the Brass Racer in 1982, he started a separate series of five-digit numbers (the first digit being zero) which were used on the stickers placed on the bottom of the keys.

Confusion reigned, until January 1997, when *The Vail Correspondent* published John Elwood's (WW7P) "Birthdates of the Vibroplex Keys." This article, based on John's study of Company advertisements and owner's purchase information, finally correlated serial numbers with dates from 1905 through 1995. But there were more numbers to follow.

Garsoe's metal-plate numbers reached into the 80000 range, so when S. Felton "Mitch" Mitchell, Jr., WA4OSR, decided to start numbering his own (D9 type) nameplates in 1995 with 100500, it looked like he had jumped ahead to a new number series. But it wasn't clear-cut. Mitchell's intent was to start with 100000, reserving the numbers from 100000 to 100499 for the new hand key which was then being designed (and which was produced in 1996). However, the first hand key received number 100100; the first one-hundred numbers are further reserved for "gold" hand keys and "special order custom keys" to be made in the future (as this is being written). Dating Mobile keys by serial number will be a challenge for future collectors.

Although the Mobile numbers may have looked like a new series, they aren't. The problem arose when Garsoe selected his numbers. What is interesting (and probably only



Style D (bug) plate (type D4).

coincidental) about his selection of 40000 as a second-choice starting point is that these were numbers Martin hadn't reached and Albright skipped over in 1915. But while the 40000-range numbers are unique to the Maine keys, once Garsoe had passed 49999 he was duplicating Albright's early 1915 numbers (used with the last of the B4 plates) and those following. And it appears that all of the Mobile numbers will duplicate those used from about 1927 onward. When serial numbers duplicate those used in the past, the key number alone is no longer sufficient to identify or date a key. If a number/year correlation chart is produced, it will require an additional item of information: The nameplate type.

In addition to using numbers for dating, it might be interesting to use them to identify the "first Vibro-Keyer," for example, or the "last 833 Broadway" key. Searching for such numbers is for fun, not financial gain, since any added collector value is subject to immediate vaporization when another collector announces a lower (or higher) number.

One other number sometimes found on Vibroplex keys should be mentioned: The single digit (1, 2, 3 or 4) stamped on the flat metal connector strips (called "contact strips" by the Company) underneath the base. This is found on a few bugs from the late 1930's to the early 1940's. It is apparently a supplier's artifact used to identify the different strip lengths, and has (as collector Paul Bock, K4MSG, puts it) "no real significance otherwise."

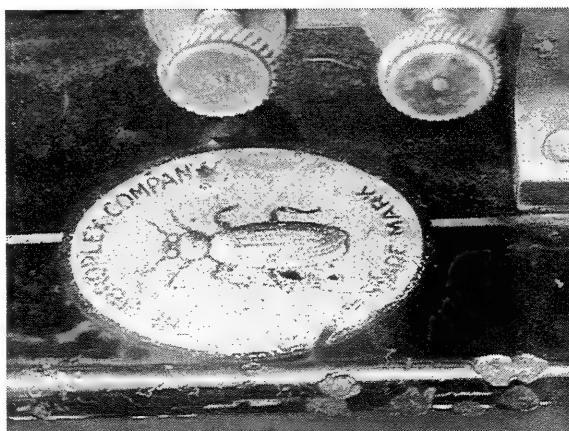
Decals

The first decal to be found on Vibroplex keys is what I call the "Albright" decal, which was used around 1913 - 1915 (it is typically found on models with the B4 nameplate). This decal has a circular shape with the word "Vibroplex" in a slash through the circle. The name "J.E. Albright" appears in the upper part of the circle. This is unusual because it is the only insignia with Albright's name to appear on Vibroplex keys.

The second, more common, decal is the "bug" decal. This consists of a gold oval containing a likeness of the now-familiar lightning bug logo. This decal appeared in the late 'teens, usually in conjunction with the type C3 nameplate (1919 - 1921). When the bug appeared on the nameplate itself in 1921, there was no longer a reason to add the decal to the base.



Albright decal.



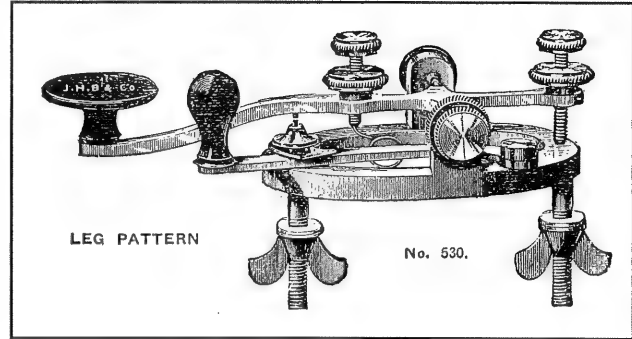
Bug decal.

Both the Albright decal and the Bug decal are said to be water soluble. For this reason, the lack of a decal on a cleaned-up Vibroplex bug of the era in which a decal might be expected may not mean much, except that the "restorer" learned a sad lesson.

Development of the Semi-Automatic Key

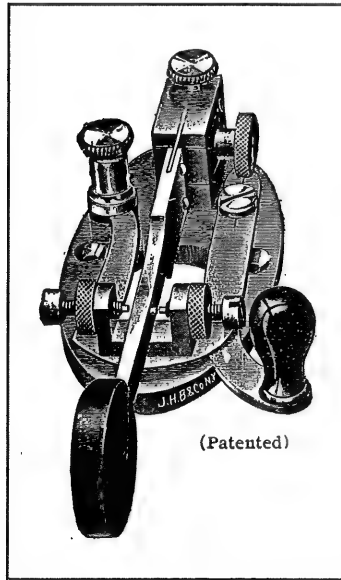
The semi-automatic key, or "bug" as it came to be called, did not spring fully-formed from the mind of one ingenious inventor. Like most useful devices, its creation was the work of several men, each improving on their own or other's efforts.

From the birth of modern electromagnetic telegraphy in 1844, the changes made to the key (Morse called it a "correspondent") principally affected its shape. From a heavy, straight lever, to a delicately-curved "camelback," the changes were directed toward improving the durability or ease of manufacture of the instrument. These objectives culminated in Jesse H. Bunnell's invention of the "steel lever key" in 1881. Even today, Bunnell's design is favored over all others for a straight key.



Bunnell steel-lever key.

Thereafter, improvements focused on ease of use. The bane of the professional telegrapher was "glass arm," a crippling disability that could cost a man his livelihood. The "double speed key," introduced by J.H. Bunnell & Company in 1888, was one attempt at solving this problem.



Double speed key.

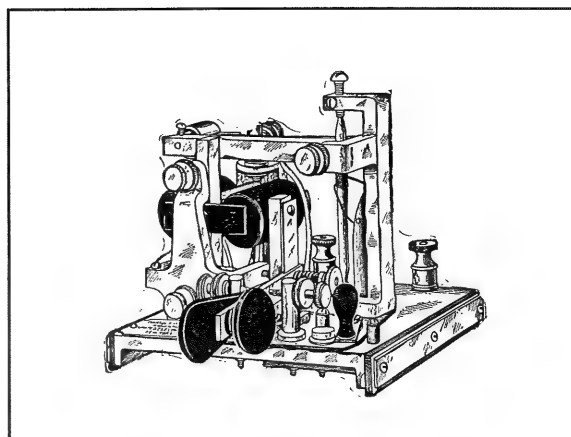
The side-to-side motion of what we now commonly refer to as a sideswiper is completely manual. The lever closes the circuit when it is thrown either to the left or to the right. Typically, the double speed key is operated with alternating motions of the paddle to the left and right, irrespective of the order of dits and dahs comprising a character. The horizontal motion of the sideswiper's lever, and its effecting a purpose in either direction, may have planted the seeds of an idea in the minds of many of the day's experimenters. The result was the appearance of battery operated vibrating keys, which used an electromagnet to automatically generate code elements. Hold the key lever to one side, and the vibrating arm would make dots all day long. One telegrapher experimenting with electromagnetic keys was Horace G. Martin.

The publisher Walter P. Phillips was keenly interested in the rapid transmission of information. In 1879, he had devised the Phillips Code to increase the speed with which his correspondents could file press reports. He saw that Martin's work, if successful, would lead to faster telegraphy. Phillips provided Martin with financial backing and encouragement, and in 1902 Martin filed a patent application for a battery powered key. This was an improvement over other vibrating keys of the time. Martin's design was novel in that his device would, like modern bugs, produce dots automatically, but leave the generation of dashes to the operator. Also like today's bugs, the horizontally swinging key lever was moved to the left for dashes, and to the right for dots.

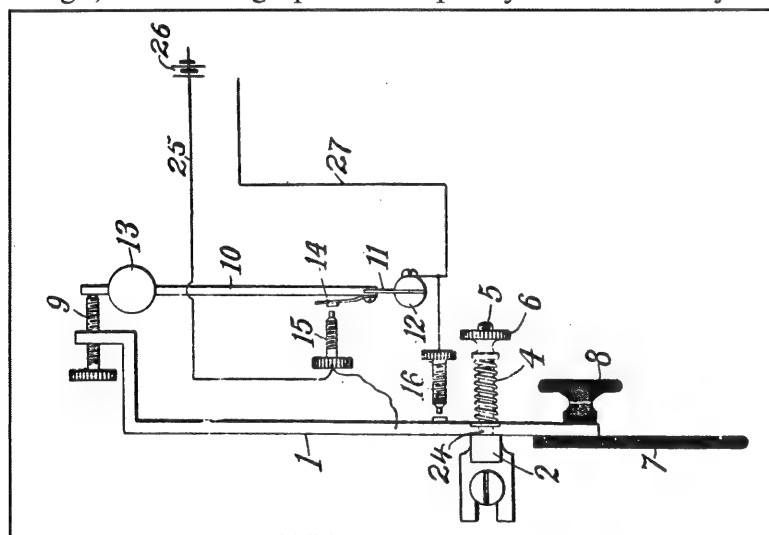
Martin's patent, no. 732,648, was granted in 1903. Walter Phillips' reward for his faith in Martin was a half interest in the patent rights. Martin, Phillips and others then formed the United Electrical Manufacturing Company to manufacture the new "Autoplex."

In the six claims of his Autoplex patent, Martin disclosed all of the alternative ways of producing automatic dots and manual dashes that he could envision. Martin intended to prevent others from making similar keys, but he had made one crucial mistake.

On January 11, 1904, William O. Coffe, of Cleveland, Ohio, filed a patent application for an "Improvement in Telegraph-Keys." His design incorporated a vertically-suspended pendulum with a leaf spring and contact at the bottom. The pendulum was held against a stop by a "key-lever," placing tension on the leaf spring. Moving the key-lever released the pendulum; the pendulum and spring then worked together to generate a series of dots as long as the key-lever was disengaged. Coffe had eliminated the electromagnets and batteries from Martin's Autoplex design; his "Mecograph" was a purely mechanical key.



Martin's battery-powered Autoplex.



Martin's 1904 mechanical key.

Horace Martin had also eliminated the electromagnetic vibrator from his Autoplex to make a fully-mechanical key. He applied for a patent on May 7 1904; it was granted on August 9 1904 as number 767,303. This invention differed from Coffe's in that the pendulum lay horizontally above the base. Martin's patent is notable because in it, for the first time, the term "semi-automatic" was used to describe the operation of such a key.

But by May 1904, Coffe was already selling his vertical Mecograph key. That very month,

in ads for the Autoplex (and relying on its patent), U.E.M. announced that its "attorneys have been instructed to bring suit against the makers of an inferior machine called the Coffe Mecograph for infringement of our patent rights, and we expect soon to stop the manufacture, sale or use of that instrument."

Martin's attorneys may have delayed the issuance of Coffe's patent, but eventually, on February 13 1906, patent no. 812,183 was issued to Coffe. A year later Benjamin Bellows, to whom Coffe's patent had been assigned, turned the tables on Martin, and filed suit against him for infringement. After initially losing, on appeal Coffe's patent was upheld. Coffe had been lawfully proclaimed the inventor of the mechanical semi-automatic key.

When addressing our advertisers, please mention The Railroad Telegrapher.

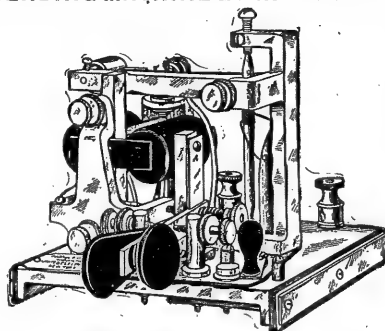
WOULD YOU LIKE TO BE A FAST AND PERFECT SENDER?

The button on the MARTIN KEY is similar to that on the old style instrument, but is operated differently—a horizontal instead of vertical motion being used. When the button is pressed lightly to the right, the machine makes automatic dots in any required number; the dashes are made by pressing the button to the left. To illustrate: The letter P is made by holding the key against the right contact until the machine makes five dots—one motion of the hand; the figure 4 is made in two motions, one to the right for the four dots, and one to the left for the dash. The instrument can be adjusted to any desired speed to suit wire conditions, and the sending will "carry" across the continent.

The AUTOPLEX makes it possible for any operator, regardless of his experience, to send faster and better than best experts now employed by the Press Associations.

BUY The Martin Autoplex

THE ONLY REALLY PRACTICABLE
SENDING MACHINE EVER INVENTED



You can learn to operate it in two weeks. No keyboard or complicated movement to master. The AUTOPLEX is simply an improvement on the old-fashioned key, in that it makes dots automatically.

NOTE—Our attorneys have been instructed to bring suit against the makers of an inferior machine called the Coffe Mecograph for infringement of our patent rights, and we expect soon to stop the manufacture, sale or use of that instrument.

Telegraphers who have lost their grip, after a couple of weeks' practice, can send prettier and speedier Morse than they could in their palmiest days. By learning the AUTOPLEX you can place yourself in a class with the finest senders in the country, and thus increase your earning capacity, as the demand for expert senders in the brokerage and leased wire business is constantly growing.

No telegrapher, railroad or commercial, who wishes to keep abreast of the times, can afford to be without this key, as it will displace the old style key in commercial and press work as surely as the typewriter has displaced the pen.

Advanced telegraphers are now taking up the AUTOPLEX, and it is only a question of time when all will follow. You will realize this fact after once hearing the AUTOPLEX used.

Write us for circular more fully describing the instrument.

Only a few of the keys have been made thus far, but without exception every man fortunate enough to have secured one will attest its worth.

UNITED ELECTRICAL MFG. CO.,
25 Broad St., New York.

Ad from May 1904 The Railroad Telegrapher includes a threat to Coffe.

The problem with Martin's "semi-automatic" key patent of 1904 was that it had been filed after Coffe's. And Martin's Autoplex patent of 1902 didn't help. Martin's error in that patent was his failure to foresee the possibility of a purely mechanical design; this resulted in every one of the six Autoplex patent claims making reference to an electromagnet.

But it was a Pyrrhic victory for Coffe and Bellows. Not many of the original Mecograph keys were sold. And, interestingly enough, Martin never manufactured his semi-automatic key of 1904. Perhaps he was concerned about the ramifications of Coffe's patent application. Or perhaps Martin's semi-automatic key just didn't work very well. The vibratory mechanism operated, like that of the Mecograph, on the "release" principle. That is, the mainspring of the pendulum was held in a state of tension or readiness by the key lever. When the lever was pressed for dots, the pendulum was released, set free to vibrate.

United Electrical continued to manufacture and sell the electromechanical Autoplex, but not in any great quantity. In 1904, U.E.M.'s ads admitted that "Only a few of the keys have been made thus far...." And Martin continued to try to improve his key. Some accommodation may have been made with Bellows regarding the Coffe patent, for in 1905 Martin came out with a new type of mechanical semi-automatic key. Like his 1904 design, the pendulum lay horizontally above the base. But now, the pendulum was directly attached to the main key lever by the mainspring.

Martin called his new key the "Vibroplex."

No. 732,648.

PATENTED JUNE 30, 1903.

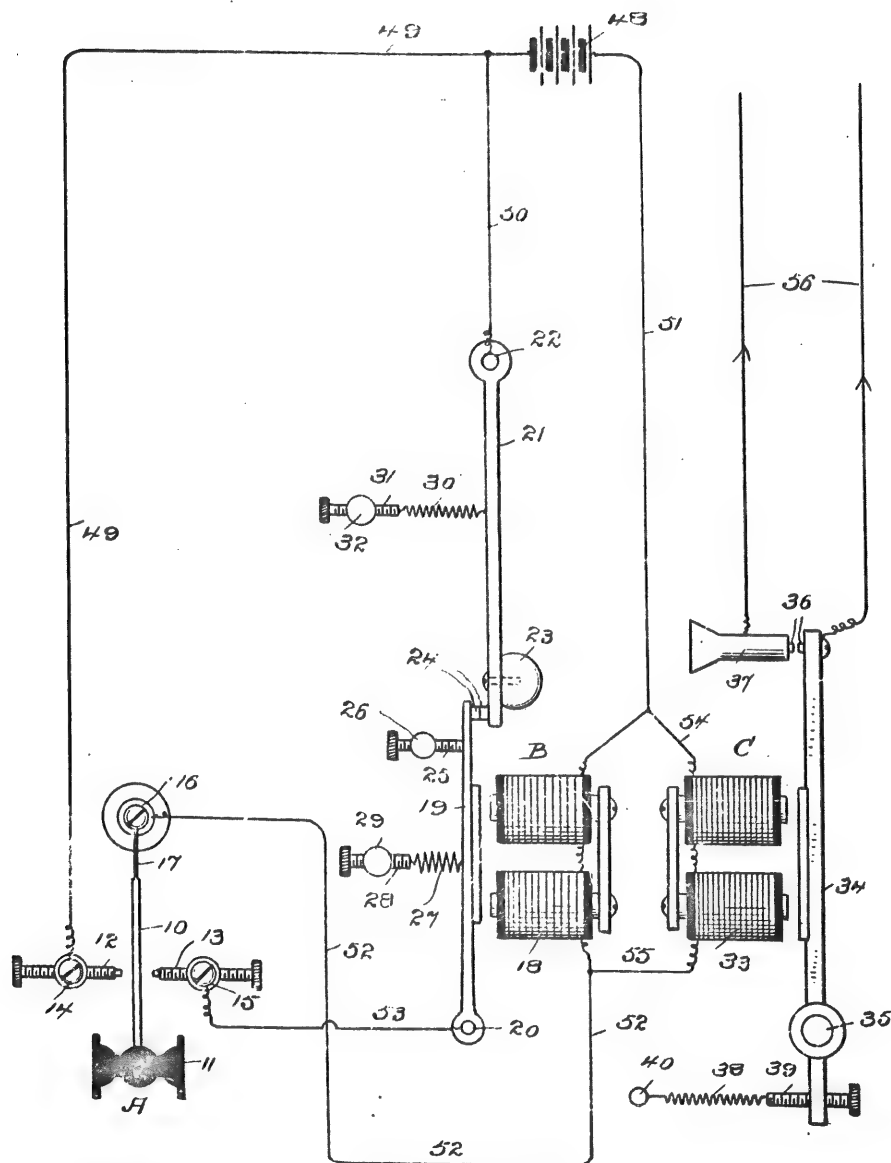
H. G. MARTIN.
TELEGRAPHIC TRANSMITTER.

APPLICATION FILED OCT. 6, 1902.

NO MODEL.

3 SHEETS—SHEET 1

Fig. 1.



WITNESSES.

H. A. Lamb.
J. W. Atherton.

INVENTOR.

Horace G. Martin
By A. M. Wooster
Atty.

No. 732,648.

PATENTED JUNE 30, 1903.

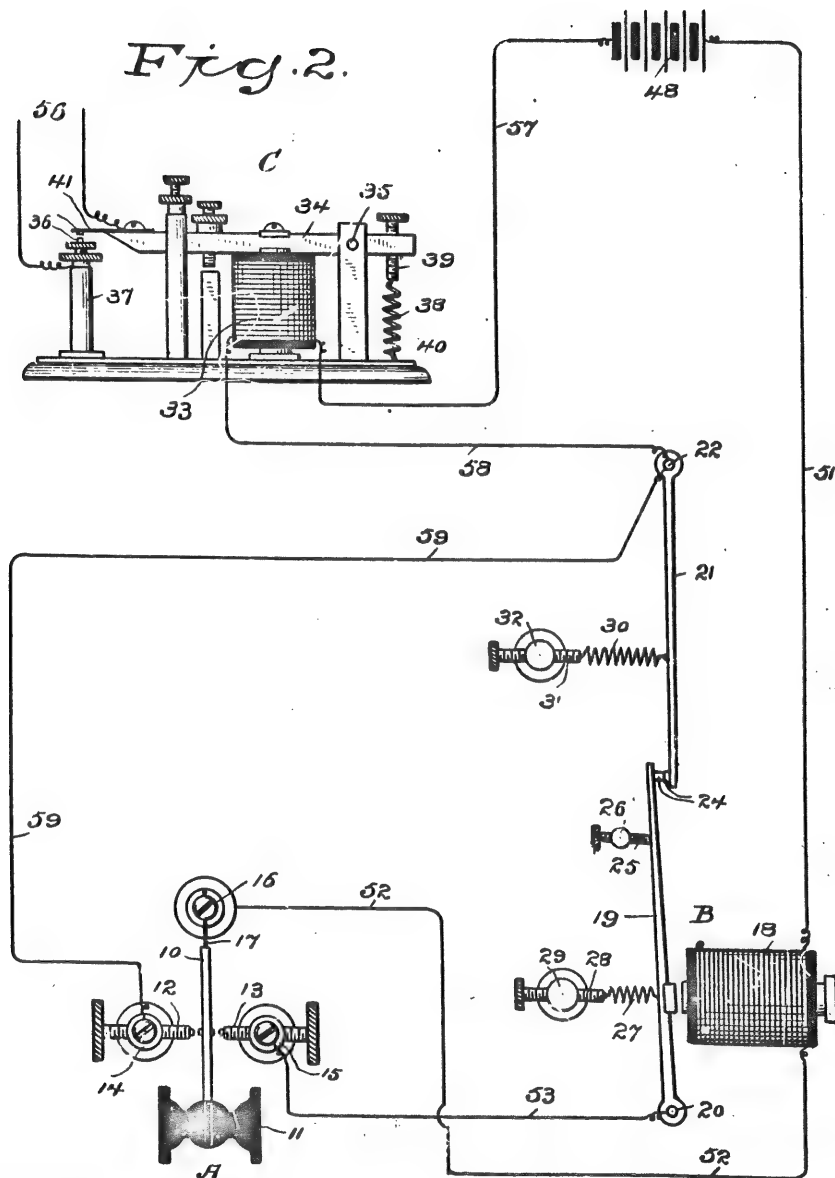
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TELEGRAPHIC TRANSMITTER.

APPLICATION FILED OCT. 6, 1902.

NO MODEL.

3 SHEETS—SHEET 2.



WITNESSES.

H. A. Lamb
S. W. Atherton.

INVENTOR.

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A. M. Wooster atty.

No. 732,548.

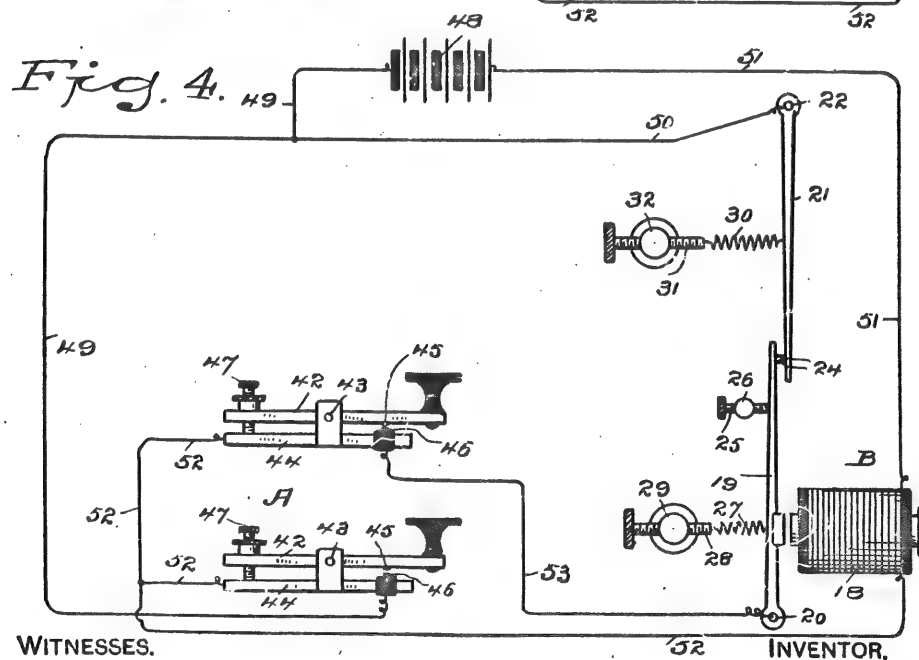
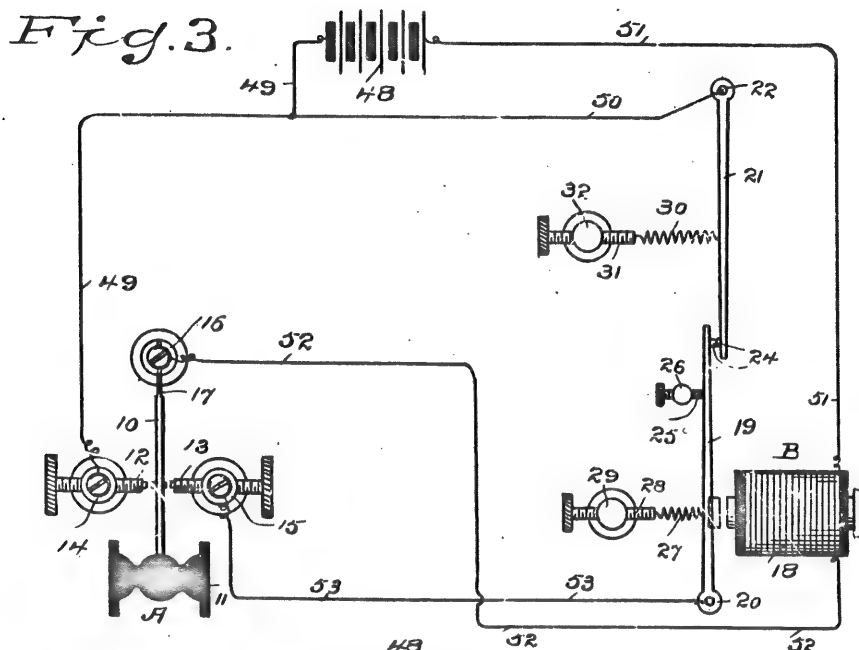
PATENTED JUNE 30, 1903.

H. G. MARTIN.
TELEGRAPHIC TRANSMITTER.

APPLICATION FILED OCT. 9, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



WITNESSES.

H. A. Lamb.
S. W. Asherton

INVENTOR.

Horace G. Martin
By A. M. Wooster
Att.

No. 732,648.

Patented June 30, 1903.

UNITED STATES PATENT OFFICE.

HORACE G. MARTIN, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF
TO WALTER P. PHILLIPS, OF BRIDGEPORT, CONNECTICUT.

TELEGRAPHIC TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 732,648, dated June 30, 1903.
Application filed October 6, 1902. Serial No. 126,055. (No model.)

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented a new and useful Telegraphic Transmitter, of which the following is a specification. My invention relates to telegraphic transmitters, and has for its object, broadly, to provide an instrument of this character which shall retain all the merits of the Morse key, but shall be so constructed that it will make all dots automatically, leaving it to the power of the operator to adjust the length of the dots and leaving the spaces and dashes wholly at the control of the operator—that is to say, the operator may lengthen or shorten the dots, the spaces and the dashes remaining at his control, or lengthen the spaces and dashes at will, the dots remaining constant. My invention, in other words, provides a simple and effective method of sending that wholly avoids the intense nervous strain of the Morse keys and still retains its merits.

It is of course well understood that the letters of the Morse system consist of dots, spaces, and dashes. For example, the letter P consists of five dots, the letter C of two dots, a space and a dot, and the letter B consists of a dash followed by three dots. As an example of the expenditure of nerve force required of an operator by the Morse system it may be stated that the word "Mississippi" requires thirty-two depressions of the key and thirty-two relaxations of the pressure or upward movements. For each average word transmitted the operator must make twenty-four nerve exertions. An operator transmitting fifteen thousand words in eight hours, as many do, is compelled to depress the key one hundred and eighty thousand times and to release the key an equal number of times, making another one hundred and eighty thousand upward movements—that is, an average of three hundred and sixty thousand nerve exertions in eight hours. The result is that operators not infrequently completely lose control over the key, becoming victims of what is known as "telegrapher's paralysis." It is, in fact, beyond dispute that the terrible nervous strain of moderately-fast sending with the Morse key leads to various derangements of the physi-

cal, mental, and nervous systems, and, furthermore, that when the power of the sender begins to fail the strain upon the receiver is very greatly increased.

The evils above mentioned have led to the adoption of various means for lessening the nervous strain upon the sender and for assisting operators in the incipient stages of telegrapher's paralysis, some of which have given more or less relief, but none of which have been able to get away from the fundamental principle of the Morse key with the exception of the keyboard system, the objections to which are too well known to require mention.

In practice good Morse senders emphasize their sending as a person does his words in talking. The condition of the wire necessitates the emphasis of certain letters or portions of letters at times, the operator relying upon the "feel" of the wire at the instant that a letter or portion of a letter is to be formed and also on the ability of the receiver. This emphasis is accomplished almost entirely by lengthening or shortening the dashes and spaces, the speed of the dots remaining constant. It is an important feature of my present invention that this perfect control of the instrument and power to emphasize his sending is retained by the operator, while at the same time any number of dots may be produced by a single nerve exertion. As there are all classes of operators, it has been found that better time can be made by sending in one way to one operator and in another way to others, the different styles of sending not depending so much upon the variation of the speed of sending as a whole as upon variations of certain impulses in making dashes and also the ability to vary the speed of words or portions of words. These and kindred features have been the stronghold of the Morse key and the cause of the practical failure of all automatic transmitters heretofore devised.

In order to enable operators to greatly increase their speed and with a less consumption of nerve force, and to enable operators to send at an ordinary rate of speed very much easier than has heretofore been possible, and to enable operators afflicted with telegrapher's paralysis who are practically unable to send with an ordinary

Morse key to do good work, I have devised the novel telegraphic transmitter, of which the following description, in connection with the accompanying drawings, is a specification, reference characters being used to designate the several parts.

Figure 1 is a diagrammatic view illustrating a form of my invention which embodies a preferred form of key and also shows a repeating-sounder connected up in parallel with the electromagnet of the vibrator; Fig. 2, a similar view in which the repeating-sounder is connected up in series with the vibrator; Fig. 3, a view similar to Fig. 1, with the exception that the repeating-sounder is omitted; and Fig. 4 is a diagrammatic view illustrating a modified form of my invention in which I have shown two Morse keys connected up so as to comprise practically one key in lieu of the special form of key illustrated in Figs. 1, 2, and 3.

The essential features of my invention are a key, which I have indicated as a whole by A, a vibrator for making the dots, which I have indicated as a whole by B, and suitable electrical connections.

My preferred form of key consists of a lever 10, having a suitable finger-piece 11, which lies between adjustable contact-points 12 and 13, carried, respectively, by posts 14 and 15. Lever 10 is connected to a post 16 in such a manner as to permit it to be placed in engagement with either of the contact-points, but to normally retain it out of contact. In the present instance I have shown lever 10 as rigidly secured to a flat spring 17, which is itself rigidly secured to binding-post 16. It is obvious, however, that the special details of construction may be varied to an almost unlimited extent without departing from the principle of the invention. The vibrator comprises an electromagnet 18, having an armature 19, pivoted as at 20, and a pendulum 21, pivoted as at 22. The pendulum may be provided with a weight 23, as in Fig. 1, or the weight may be omitted, if preferred, as in the other views. The armature and the pendulum may be provided with corresponding contact-points 24. The armature is shown as normally held in contact with an adjustable back-stop 25, carried by a post 26 by means of a retractile spring 27, one end of which is connected to the armature, the other to a screw 28, carried by a post 29, whereby the tension of the spring may be adjusted. The contact-point upon the pendulum is shown as normally held in engagement with the corresponding contact-point upon the armature by means of a retractile spring 30, one end of which is connected to the pendulum, the other to a screw 31, carried by a post 32, whereby the tension of the spring may be adjusted. It is of course immaterial so far as the principle of the invention is concerned whether the key-lever swings in the vertical or the horizontal plane. The essential feature is that the key-lever is adapted to be swung between two fixed contact-

points and is arranged to normally stand about centrally between them, touching neither. The contacts may be arranged one above and the other below the lever, so that upon either raising or depressing the lever the circuit is closed, but are preferably placed upon the opposite sides of the lever, as shown in the drawings. The mode of connecting or hinging the lever or of retaining it normally in a central position or the shape or form of the lever or finger-piece are of little importance and do not enter into the spirit of the invention.

In use when the key-lever is swung to one side—in the present instance the right side—it completes the circuit, presently to be described, through the winding of the vibrator-electromagnet, which is thus energized and attracts the vibrator-armature. The armature when its movement is stopped by contact with the poles of the electromagnet kicks the pendulum out of contact with itself, thereby breaking the circuit, this action continuing automatically so long as the lever is held to that contact and sending dots into the line. If the key-lever is thrown to the other contact—in the present instance the left—the vibrator-electromagnet is energized as before, but the vibrator contact-points are shunted or short-circuited. Therefore the circuit remains closed so long as the key-lever is held to that contact and a dash is sent into the line, as will be more fully explained.

In connection with my novel vibrator and key I may or may not use a repeating instrument, as a relay or a repeating-sounder, which I have indicated by C. In the present instance in Fig. 1 I have illustrated the use in connection with my novel vibrator and key of an ordinary form of repeating-sounder connected up in parallel with the coils of the vibrator-electromagnet, and in Fig. 2 I have illustrated the use in connection with my novel vibrator and key of a repeating-sounder connected up in series with the vibrator. In Fig. 1 the repeating-sounder comprises an electromagnet 33, an armature 34, pivoted, as at 35, and provided with a contact-point 36, adapted to engage a similar contact-point 36 on a post 37. The contact-points upon armature 34 and post 37 are normally held out of contact by a retractile spring 38, one end of which is connected to a screw 39, carried by the armature, and the other end to a fixed point, as at 40. The repeating-sounder illustrated in Fig. 2 differs from the one in Fig. 1 in that it is connected up with the coils of the vibrator in series, and contact-point 36 upon the armature is carried by a spring 41.

In the form of my invention illustrated in Fig. 4, in lieu of the special form of key illustrated in Figs. 1, 2, and 3, I use two ordinary Morse keys connected up so as to comprise practically one key. When the circuit is closed by one of the levers, (the upper one as seen in the drawings,) it causes the vibrator-electromagnet to be energized without shunting the vibrator contact-

points, thus sending dots into the line, as in the other form, and when the circuit is closed by the other lever (the lower one as seen in the drawings) it causes the vibrator-electromagnet to be energized, but short-circuits the vibrator contact-points, the circuit being held closed by this lever while sending a dash into the line. 42 denotes the levers of these keys pivoted, as at 43, to bases 44.

45 denotes contact-points on the levers, 46 insulated contact-points on the bases, and 47 denotes the usual stop-screws.

My novel vibrator, the key, and the repeating instrument, if used, are connected up as follows: 48 denotes a battery from one pole of which a wire 49 leads to contact-point 12, and a wire 50 from the same pole is connected to pendulum 21. A wire 51 from the other pole of the battery leads to vibrator-electromagnet 18. A wire 52 leads from the vibrator-electromagnet to lever 10, and a wire 53 leads from armature 19 to contact-point 13.

The connections in the modified form illustrated in Fig. 4 differ from those in the other views only in that the wire 52, which in Figs. 1, 2, and 3 leads to the lever 10, in this form branches and leads to the bases 44.

Where a repeating instrument is used and connected up in parallel with the electromagnet of the vibrator, as in Fig. 1, a wire 54 leads from wire 51 to the electromagnet 33 of the repeating instrument, and a wire 55 leads from electromagnet 33 to lever 10 by way of wire 52.

56 denotes main-line wires leading from the repeating instrument.

Where a repeating instrument is used and connected up in series with the electromagnet of the vibrator, as in Fig. 2, a wire 51 leads from one pole of the battery to the electromagnet 18 of the vibrator. A wire 52 leads from electromagnet 18 to lever 10, and a wire 53 leads from armature 19 to contact-point 13, as in the other form. A wire 57 leads from the other pole of the battery to the electromagnet 33 of the repeating instrument, a wire 58 leads from electromagnet 33 to pendulum 21, and a wire 59 leads from wire 58 to contact-point 12.

The use of my novel telegraphic transmitter is as follows: Suppose, for example, that it was desired to make the letter "B," which is composed of a dash and three dots. The key-lever would be thrown to the left or dash side and held there for the proper length of time and then swung across to the right or dot side and held there until the vibrator produced three dots. In practice the operator depends upon the ear to tell when the proper number of dots has been produced. This can be done with great exactness, even by a novice. The speed of the dots and their length may be changed by varying the tension of pendulum retractile spring 30 and armature retractile spring 27 and by adjusting the armature back-stop 25. Varying either of these three adjustments causes the pendulum to be kicked

out more or less in accordance with the adjustment. When the key-lever is thrown to the dot side—that is, to contact-point 13—the circuit is closed and the vibrator opens and closes the circuit automatically thereafter, each of these automatic impulses sending a dot into the line. The space between the dots can be lengthened by lightening the tension of the retractile spring, causing the pendulum to be kicked farther away by the armature-lever. It is thus left wholly in the power of the operator by manipulation of the adjustments described above to lengthen, shorten, or quicken both the dots and the spaces.

It is of course obvious that a vibrator to produce successful telegraphic dots must follow the action of the key practically instantaneously. This I accomplish perfectly with my novel construction. I have found it impossible, however, to produce the desired result with vibrators constructed on the plan of a vibrating bell or buzzer with the armature weighted or damped to secure reduction of speed. Vibrators constructed on the buzzer plan do not get into action quickly enough, and when they do it is with a varying rate of speed, the first of a series of dots, as in the letter "P," being relatively slow and the last part of the series fast.

In the form illustrated in Fig. 1, in which a preferred form of key is used and a repeating-instrument electromagnet is shown as connected up in parallel with the vibrator-electromagnet, when the key-lever 10 is moved toward the right—that is, thrown to contact-point 13—the current passes from the positive pole of the battery over wire 51 to the electromagnets of both the vibrator and the repeating instrument, a portion of the current passing through electromagnet 18 of the vibrator and a portion passing through electromagnet 33 of the repeating instrument and uniting again at wire 52, then passing through key-lever 10 and contact-screw 13 to wire 53 and through armature 19, pendulum 21, and wire 50 to the negative pole of the battery. The action of the current is to magnetize the electromagnets of both the vibrator and the repeating instrument, causing their respective armatures 19 and 34 to be attracted. Armature 34 of the repeating instrument on being drawn down closes contacts 36, leading to the main line or other foreign circuit, as wires 56, and sends an impulse into said circuit, the length of the impulse varying in accordance with the adjustment of the vibrator mechanism. The vibrator-electromagnet, being energized by a portion of the same current that caused the attraction of armature 34 of the repeating instrument, therefore attracts its own armature 19, which carries pendulum 21 with it at a speed depending upon the tension of armature retractile spring 27 and the pendulum retractile spring 30. When armature 19 strikes the poles of electromagnet 18, which in this case act as a dead-stop therefor, the pendulum being unimpeded by anything except its retractile spring and having gained a certain momentum

does not cease its forward movement instantly, but continues the forward movement until its momentum is overcome by retractile spring 30, thus breaking the vibrator-circuit through the pendulum and wire 50 to the battery. At the instant vibrator-armature 19 touches the poles of electromagnet 18, the circuit being broken between contact-points 24 at the ends of armature 19 and the pendulum, the electromagnets of the vibrator and of the repeating instrument are both demagnetized, armature 34 of the repeating instrument is moved away from the poles of electromagnet 33 by retractile spring 38, thereby breaking the main-line circuit, and the vibrator-armature 19 is moved away from the poles of electromagnet 18 by retractile spring 27 until said armature reaches back-stop 25, where it remains until the pendulum more leisurely returns to contact with the vibrator-armature, thereby closing the vibrator-circuit again, whereupon both electromagnets are again energized. This action continues automatically so long as key-lever 10 is held toward the right—that is, in engagement with contact-point 13, to which wire 53 is connected—each automatic impulse causing a kick of the pendulum and sending a dot into the line.

When the key-lever is moved toward the left—that is, thrown to contact-point 12—the current, as before, leaves the positive pole of the battery over wire 51, dividing through the vibrator-electromagnet and repeating-instrument electromagnet, uniting again at wire 52, and passing on through key-lever 10, contact-screw 12, and over wire 49 to the negative pole of the battery, thereby shunting or short-circuiting the contacts 24 between vibrator-armature 19 and the pendulum. This action energizes both the vibrator-electromagnet and the repeating-instrument electromagnet, the repeating-instrument armature being attracted, and consequently closing the main-line or foreign circuit at contacts 36, this circuit remaining closed so long as the key-lever is held to left-hand contact 12, leading to the shunt-circuit. As this action also energizes the vibrator-electromagnet, its armature 19 is attracted and carries the pendulum with it—*i. e.*, kicks it out in precisely the same manner as when the key-lever was in contact with the opposite contact-point. When the key-lever is in contact with contact-point 12, however, the action of the vibrator is annulled by the shunt or short-circuit over wire 49. It will be readily understood, therefore, that the key-lever is thrown to the left—*i. e.*, the shunt side—when it is desired to send a dash into the line.

When the repeating-instrument electromagnet is connected up in series with the vibrator-electromagnet and the armature and pendulum, as in Fig. 2, the action of the current is the same as in the other form; but instead of the current dividing and part passing through the vibrator-electromagnet and part through the repeating-instrument electromagnet and then reuniting the

whole current passes from the positive pole of the battery over wire 51, through the vibrator-electromagnet, and through wire 52 to the key-lever. If the key-lever is held to contact-point 13, leading to wire 53, the whole current upon leaving the positive pole of the battery passes through the vibrator-electromagnet and armature and the pendulum and through the repeating-instrument electromagnet to the negative pole of the battery. This action energizes both the vibrator and the repeating-instrument electromagnets, and the operation is substantially the same as with the other form. When the key-lever is thrown toward the left—that is, to contact-point 12, with which a shunt or short-circuit wire 59 is connected—the circuit is closed upon both the vibrator and the repeating-instrument electromagnets and remains closed so long as the key-lever is held to that side, the only difference being that the entire current passes through both electromagnets, they being in series with each other instead of dividing and passing through the vibrator and repeating-instrument electromagnets in parallel, as in the other form. In the form illustrated in Fig. 2 the action of the vibrator is annulled by the shunt or short-circuit the same as in the form illustrated in Fig. 1.

In the form illustrated in Fig. 3 the repeating instrument, which is not an essential feature of the invention, is omitted. The action is the same as with the other forms, excepting, of course, the omission of the repeating instrument. The battery in this form may be at the distant end of the circuit, and the key and vibrator may be made to send impulses into the circuit in accordance with the principle of my invention without the use of a repeating instrument. The current, leaving the distant end of the circuit over wire 51, passes through the vibrator-electromagnet and through wire 52 to the key-lever, and if the key-lever was held to contact-point 13 the current would be through wire 53, vibrator-armature 19, and the pendulum back to the source of the current. The electromagnet would be energized, the armature attracted, and the pendulum carried thereby, *i. e.*, kicked away from contact therewith, which would open the circuit, and the vibrator-armature would then return to contact with back-stop 25 through the action of retractile spring 27, and dots would be sent into the line the same as with the other forms. Should the key-lever be thrown toward the left—*i. e.*, to contact-point 12—the vibrator would be short-circuited—that is, the current would flow steadily over wire 49 to the source of the current until the key-lever was released, and dashes would be sent into the line. In sending on the duplex or quadruplex the vibrator may be inserted directly in the local circuit of the pole-changer or transmitter.

In the form illustrated in Fig. 4 the action is substantially as in the forms illustrated in Figs. 1 and 2 if a repeating instrument is placed in the circuit and substantially the same as in the form illustrated in Fig. 3 if a repeating instrument is

not used. The two Morse keys perform the same duty as the preferred form of key illustrated in the other forms—that is to say, one closes the vibrator-circuit, this circuit including the repeating instrument if used, and sends dots into the line, and the other shunts or short-circuits the vibrator contact-points while closing the circuit and sends dashes into the line, instead of these functions being performed by movement of a single key in opposite directions.

Having thus described my invention, I claim—

1. In a telegraphic transmitter the combination with a vibrator comprising an electromagnet, an armature therefor, a pivoted pendulum whose free end is adapted to engage the armature, and retractile springs for said armature and pendulum, of a key, electrical connections leading from the source of supply through the electromagnet to the key and from one side of the key directly to the source of supply and from the other side of the key through the armature and pendulum to the source of supply, so that when the circuit is closed at one side of the key the current travels through the electromagnet and attracts the armature which in turn kicks the pendulum out of contact therewith and breaks the circuit, which action continues automatically sending dots into the line, and when the circuit is closed at the other side of the key the armature and pendulum are short-circuited and a dash is sent into the line.

2. In a telegraphic transmitter, the combination with a key comprising a lever and contact-points on opposite sides thereof, of a vibrator comprising an electromagnet, and armature therefor, a pivoted pendulum whose free end is adapted to engage the armature, and retractile springs for said armature and pendulum, and electrical connections leading through the electromagnet to the key-lever and from one contact-point directly to the source of supply and from the other contact-point through the armature and pendulum to the source of supply, so that when the key-lever is thrown to one contact-point the current travels through the electromagnet and attracts the armature which in turn kicks the pendulum out of contact therewith and breaks the circuit, which action continues automatically sending dots into the line, and if the key-lever is thrown to the other contact-point the armature and pendulum are short-circuited and a dash is sent into the line.

3. In a telegraphic transmitter, the combination

with a vibrator comprising an electromagnet, an armature therefor, a pivoted pendulum whose free end is adapted to engage the armature, and retractile springs for said armature and pendulum, of a repeating instrument connected up in parallel with the vibrator, a key, and electrical connections leading from the source of supply through the vibrator and the repeating instrument to the key, and from one side of the key directly to the source of supply and from the other side of the key through the armature and pendulum to the source of supply.

4. In a telegraphic transmitter, the combination of an electromagnet, an armature therefor, a pivoted pendulum having its free end adapted to engage the armature and to be kicked to one side thereby, a key, and electrical connections leading from the source of supply through the electromagnet to the key, and from one side of the key directly to the source of supply and from the other side of the key through the armature and pendulum to the source of supply, for the purpose set forth.

5. In a telegraphic transmitter, the combination of an electromagnet, an armature therefor, a pivoted pendulum having its free end adapted to engage the armature and to be kicked to one side thereby, a key, retractile springs for said armature and pendulum and electrical connections leading from the source of supply through the electromagnet to the key, and from one side of the key directly to the source of supply and from the other side of the key through the armature and pendulum to the source of supply, for the purpose set forth.

6. In a telegraphic transmitter, the combination with a key comprising a lever and contact-points on opposite sides thereof, of an electromagnet, an armature therefor, a pivoted pendulum having its free end adapted to engage the armature and to be kicked to one side thereby, and electrical connections through the electromagnet to the key-lever and from one contact-point directly to the source of supply and from the other contact-point through the armature and pendulum to the source of supply, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HORACE G. MARTIN.

Witnesses:

ORVORD BREWER,

I. W. CONNALLY.

No. 812,183

PATENTED FEB. 13, 1906.

W. O. COFFE.
TELEGRAPH KEY.

APPLICATION FILED JAN. 11, 1904.

2 SHEETS—SHEET 2.

Fig. 3.

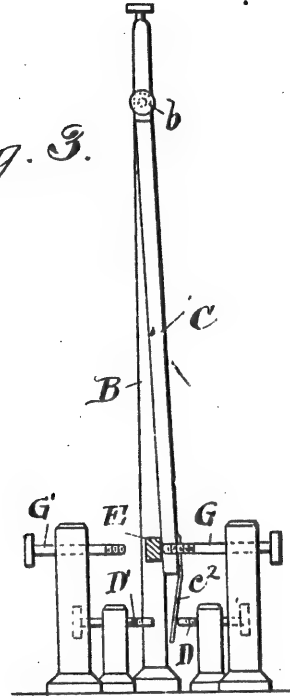
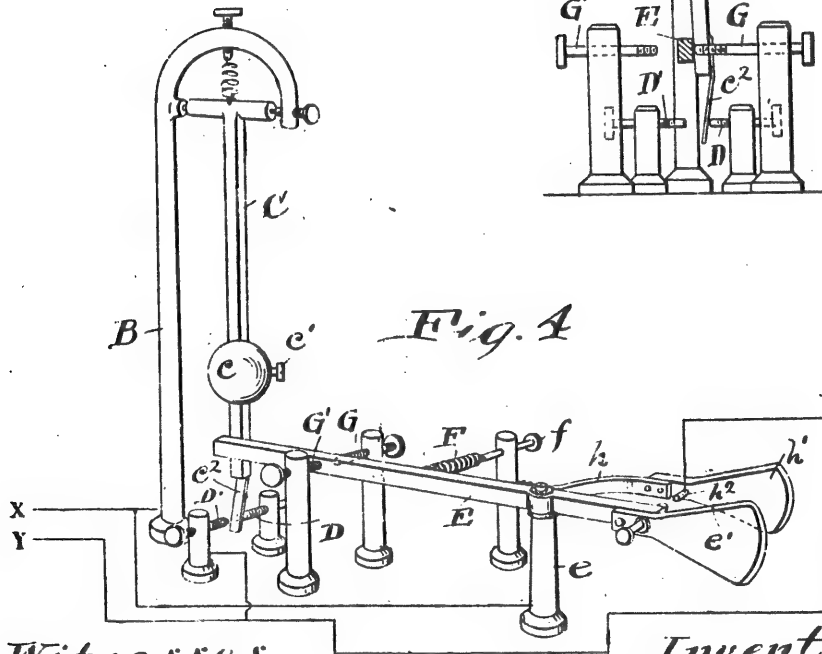


Fig. 4



Witnesses.
E. B. Gilchrist
B. V. Brockitt.

Inventor:
William O. Coffe.
By his Attorneys,
Shurston & Bates.

UNITED STATES PATENT OFFICE.

WILLIAM O. COFFE, OF CLEVELAND, OHIO, ASSIGNOR, BY DIRECT AND
MESNE ASSIGNMENTS, TO BENJAMIN F. BELLOWS, OF CLEVELAND,
OHIO.

TELEGRAPH-KEY.

No. 812,183

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed January 11, 1904. Serial No. 188,448.

To all whom it may concern:

Be it known that I, WILLIAM O. COFFE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Telegraph-Keys, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The ordinary Morse key requires a movement of the operator's hand for each dot or dash. This is extremely tiresome and wearing on the operator. To relieve the nervous strain, mechanism has heretofore been devised whereby the key is provided with two movements, one of which manually causes the dashes as usual, the other of which initiates mechanism which automatically makes the dots. Inasmuch as the dots very much preponderate in the Morse alphabet, the relief thus afforded to the operator has been demonstrated to be very great. The mechanisms heretofore used for effecting this result, however, have comprised electromagnets, batteries, switches, adjustable springs, and other features making a complex and expensive apparatus and one requiring continual adjustment as the battery runs down.

The object of this invention is to provide a mechanism to accomplish the same result while doing away with the electromagnets and batteries, the construction being at once simple, cheap, durable, and not liable to get out of order.

To this end the apparatus consists of a controller, said controller comprising a vibrator having a uniform rate of vibration and operated mechanically and adapted when released to make and break the circuit, and a key operating to release the vibrator to effect the dots, another movement being provided for the dashes.

The more particular embodiment of the invention herein shown and more fully hereinafter described is also comprised within the present invention.

In the drawings, Figure 1 is a side elevation of my improved key, and Fig. 2 is a plan thereof sectioned through the vibrator-arm and its standard. Fig. 3 is a vertical section through the key-lever, being on the line 3 3 of Fig. 2. Fig. 4 is a perspective view of the apparatus, showing the arrangement of circuits.

The same letters of reference designate the same parts in each figure.

Referring to the embodiment of parts shown in the drawings, A represents a suitable base, from which rises a standard B. Pivotaly carried by this standard is the depending vibrator-arm C. There may be an adjustable pivot-screw *b* for lightly supporting this arm and an electric conductor *b'*, connecting the arm with the standard. Slidably mounted on the arm C is shown a weight *c*, which may be clamped in adjusted position by a set-screw *c'*. At the lower end of the arm C is the leaf-spring *c*², which projects between a pair of stop-screws D D', these screws being carried by suitable standards. In the vertical position of the vibrator or pendulum C the spring *c*² is preferably midway between the contact-points D and D'.

Fig. 4 indicates by X and Y a main line. One terminal X is connected with the standard B and the other terminal Y with the stop-screw D'. From this it results that if the spring *c*² is in contact with the stop D' the circuit is closed. If the spring is out of contact with this stop, the circuit is open.

E represents a key-lever pivotaly mounted on the standard *e*. This lever extends across and is adapted to bear against the pendulum C. It is drawn toward the pendulum by spring F, suitably adjusted by a screw *f*. Suitable stop-screws G and G' are provided for limiting the movement of the key-lever. With the parts in normal position, as shown in the drawings, the spring F draws the key-lever to the right against the stop G, and this holds the pendulum with the leaf-spring *c*² bent against the stop-screw D. Now if the key-lever is moved away from the stop G into engagement with the stop G' the pendulum is released and swings away from the stop D and over against the stop D' under the influence of gravity, momentum, and the retractile force of spring *c*². This closes the circuit at D'; but the pendulum immediately returning breaks the contact, and thus causes a dot to be sent over the line. As it again swings against the stop D' another dot is sent, and so on. The length of the pendulum is such that the successive makes and breaks in the circuit which it causes shall send the succession of dots over the line at a high rate of speed. I have found a pendulum four or five inches long to be very satisfactory; but the length varies with

the stiffness of the spring c^2 and with the speed required. The sliding weight c allows variations of the effective length of the pendulum. The weight c , though desirable, is not absolutely essential, as the result could be accomplished by making the arm C heavier. The elasticity of the spring c^2 not only assists momentum, but insures the pendulum making effective contact on its successive swings. In the Morse alphabet six dots is the maximum required for any character, (six dots represent the figure "6;" five dots, the letter "P;" four dots, the letter "H," these being the characters using the most dots,) and the pendulum could easily make ten or twelve dots, and so it is certain to make any number required from one to six, according to the length of time the key-lever E is held away from the stop G . The arc through which the pendulum swings is so very short that its movement is substantially uniform and the dots are made with an accuracy exceeding the best hand practice. Adjustment of the stop-screws D and D' allows the sending to be light or heavy, as desired.

For the movement of the key-lever E , I secure to it, preferably in front of its support e , a suitable wing or finger-piece e' . By means of a leaf-spring h another finger-piece h' is carried by the key-lever. These finger-pieces may be of hard rubber. The finger-piece h' carries a suitable contact-point h^2 , which is connected with the same main-line terminal Y to which the stop D' is connected. This contact-point h^2 coöperates with the contact-point e^2 , carried by the key-lever and connected by means of the key-lever and the standard e with the other main-line terminal X , which leads also to the standard B , as heretofore stated. Thus the finger-pieces e' and h' , which I term the "finger" mechanism, form another means for closing the circuit. These pieces are caused to approach each other by pressure of the operator's first finger on the piece h' whenever it is desired to make a dash, and the contact-points h^2 and e^2 contacting close the circuit for as long a period as such pressure is maintained. When the pressure is released, the spring h separates the contacts. In making the dashes, therefore, the mechanism is acted on by a pressure toward the left of the operator's first finger on the piece h' . In making the dots the whole finger mechanism is swung to the right by pressure of the thumb on the piece e' , and this releases the pendulum until the proper number of dots have been made, when their continuance is cut off by the return of the key-lever.

One of the advantages of my apparatus is that it is all contained in a single instrument. The wiring from the standards B and e and the contact-points D' and h^2 terminates in a pair of binding-posts $K K$, and all that is necessary to do is to connect two terminals of the main line to these posts.

I claim—

1. In a telegraph-key, in combination, a gravity-vibrator adapted to swing by its own tendency

and thereby make and break the circuit, a finger-key adapted to release the vibrator, and an adjacent finger-key adapted to open and close the circuit independently of the vibrator.

2. In a telegraph-transmitter, the combination of a stop and a spring coöperating therewith, each forming a terminal of an electric circuit, and a pendulum carrying one of said terminals, and means for holding said pendulum from swinging and allowing it to swing as desired.

3. In a telegraph-key, in combination, a stop, a spring coöperating therewith each forming a terminal of an electric circuit, and a pendulum carrying one of said terminals, and means for holding said pendulum from swinging and allowing it to swing as desired, a finger-piece for operating said means, and an adjacent finger-piece for closing the circuit independently of the pendulum.

4. The combination of an arm adapted to vibrate and make and break an electric contact, a key-lever engaging said arm to prevent its vibrating, a finger-piece on said key-lever for moving it to release said arm, and an adjacent finger-piece for making the contact independently of said arm.

5. The combination of a standard, a depending pendulum supported thereby, a spring carried by said pendulum and adapted to swing the same freely in both directions, an electric terminal coöperating therewith, and a key-lever adapted to control said pendulum.

6. The combination of a standard, a pendulum suspended therefrom, a spring carried by said pendulum at its lower end, a stop-screw forming an electric terminal which said spring is adapted to engage, and a key-lever adapted to bear against said pendulum and normally hold it with the spring out of contact with the stop-screw.

7. The combination of a standard, a pendulum suspended therefrom, a spring carried by said pendulum, a stop-screw forming an electric terminal which said spring is adapted to engage, a key-lever adapted to bear against said pendulum and normally hold it with the spring out of contact with the stop-screw, and a weight adjustable carried by said pendulum for varying its effective length.

8. The combination of a standard, a pendulum supported thereby and adapted to swing freely in both directions, an electric terminal coöperating therewith, and a key-lever adapted to control said pendulum, a finger-piece for operating said key-lever and an adjacent finger-piece for making dashes.

9. The combination of a pendulum, terminals coöperating therewith to make and break an electric circuit, a key-lever, and finger-pieces carried by said lever and adapted by one movement to swing the lever into engagement with said pendulum and by another movement to make and break an independent circuit.

10. The combination of a pendulum, terminals coöperating therewith to make and break an

electric circuit and to transmit a rapid succession of short impulses through said circuit, and means for interrupting the movement of the pendulum, said means consisting of a key comprising a pivoted lever carrying a pair of finger-pieces, by one of which the key is given a movement to make and break another circuit.

11. In a telegraphic transmitter, in combination, a vibrator adapted to make and break an electrical circuit, a key-lever for controlling the operation of said vibrator, and an independent circuit-controller carried by said lever.

12. In a telegraphic transmitter, the combination of a vibrating controller including a spring, said spring constituting one terminal of an electric circuit, a cooperating terminal, finger mechanism adapted to be operated by the thumb and finger pressing in opposite directions, lever mechanism operatable thereby and adapted to allow the controller to vibrate and bring said terminals into contact, and a pair of contacts additional to said controller, one of said contacts being operatively connected with the finger mechanism.

13. In a telegraphic transmitter, the combination of a contact and a spring cooperating therewith, each forming a terminal of an electric circuit, a vibrating circuit-controller having a uniform rate of oscillation and carrying one of said terminals, means for holding said controller from swinging and for allowing it to swing as desired, a pair of contacts additional to said controller, and finger means for operating such allowing means and for closing said last-mentioned contacts.

14. The combination with a controller adapted to vibrate and make and break an electric circuit, a lever adapted to engage said controller and prevent its vibrating, a finger-piece movable in one direction independently of said lever, a pair of contacts independent of said controller, one of said contacts being movable and rigidly connected with said finger-piece, whereby the movement of such finger-piece may close such contacts without moving said lever, and means for moving said lever in the opposite direction to release the controller.

15. The combination of a controller adapted to vibrate and make and break an electric circuit, a lever adapted to engage said controller and prevent its vibrating, a spring acting on said lever to normally hold it in such position, a finger-piece connected with the lever and adapted to move it away from the vibrator, a pair of contacts additional to the vibrator, and means connected with one of said contacts and movable with said lever in the direction to release the vibrator and movable independently of said lever in the opposite direction.

16. In a telegraphic transmitter, the combination of a contact and a spring cooperating therewith, each forming a terminal of an electric circuit, a vibrating circuit-controller having a uniform rate of oscillation and carrying one of

said terminals, a member adapted to initiate the vibration of said controller, a spring acting on said member to hold the controller in idle position, a pair of contacts additional to said controller, and finger mechanism adapted to be operated by the thumb and finger pressing in opposite directions and serving by one of such movements to close said additional contacts and by the other to move said member to render the controller active.

17. In a telegraphic transmitter, the combination of a contact and a spring cooperating therewith, each forming a terminal of an electric circuit, a circuit-controller capable of making and breaking a circuit at a uniform rate and carrying one of said terminals, a lever normally engaging said controller to hold said spring and contact out of engagement, and means cooperating with said lever for making and breaking the circuit independently of said controller, substantially as set forth.

18. In a telegraphic transmitter, the combination of a controller adapted to vibrate and make and break a circuit, finger mechanism adapted to be operated by the thumb and finger pressing in opposite directions, a pair of contacts additional to said controller adapted to be closed by one of said pressures, and mechanism between the finger mechanism and the controller positively engaging the controller and actuatable by the opposite pressure to render said controller active.

19. In a telegraph instrument, the combination of a vibrator adapted to be held at one end and vibrate at the other and carrying a spring constituting one terminal of an electric circuit, a contact and a stop, a finger-piece and mechanism controlled thereby for normally holding said vibrator against the stop and with the contacts open but adapted to allow the vibrator to make a succession of contacts.

20. In a telegraphic transmitter, the combination of a vibrator, said vibrator carrying one terminal of an electric circuit and including a normally constrained spring, a cooperating terminal, a finger-piece, and lever mechanism operated thereby and adapted to hold the terminals out of contact with the spring constrained or to permit the vibrator to operate and bring said terminals into contact.

21. In a telegraphic transmitter, the combination of a controller capable of vibrating and making and breaking a circuit and including a spring, a restraining-arm therefor, a spring acting on said arm to cause it to prevent the controller from vibrating, a pair of contacts independent of said controller, and finger mechanism having two movements, by one of which it closes the independent contacts, and by the other of which it moves the arm against the action of the spring to render the controller active.

22. In a telegraphic transmitter, the combination of a vibrator capable of making and breaking a circuit at a uniform rate, key-lever mechanism normally engaging said vibrator and preventing

it from operating, means cooperating with said mechanism for making and breaking the circuit independently of said vibrator, said mechanism being capable of a movement to withdraw it from engagement with said vibrator, substantially as set forth.

23. In a telegraphic instrument, the combination of a vibratory controller including a spring supported at one end, a contact and a stop on opposite sides of the path of vibration of said controller, a finger-piece, and mechanism controlled thereby for normally holding said controller against the stop with the contacts open, but adapted to render it active to vibrate and make a succession of contacts.

24. In a telegraphic transmitter, the combination of a circuit-controller, finger mechanism adapted to be operated by the thumb and finger pressing in opposite directions, a pair of contacts additional to the controller adapted to be closed by one of said pressures, and mechanism between the finger mechanism and the controller positively engaging the controller and actuatable by the other of said pressures to render said controller active.

25. In a telegraphic transmitter, the combination of a circuit-controller capable of making and breaking a circuit at a uniform rate, finger-key mechanism, a contact for said mechanism, mechanical means extending between said mechanism and said controller and normally preventing the operation of said controller, said mechanism being capable of two movements, by one of which it actuates said mechanical means to

permit the operation of said controller, and by the other of which it engages its contact.

26. In a telegraphic transmitter, the combination of a circuit-controller, means for rendering said controller inactive, finger-key mechanism, a contact therefor, said mechanism being capable of two movements, by one of which it operates said means and renders the controller active, and by the other of which it is brought into operative relation with its contact.

27. In a telegraphic transmitter, the combination of a controller capable of making and breaking a circuit at a uniform rate, a pivoted arm normally preventing the operation of said controller, finger mechanism and a contact for said mechanism, said mechanism being capable of two movements, by one of which it moves the arm to permit the operation of the controller, and by the other of which it engages its contact.

28. In a telegraphic transmitter, the combination of a circuit-controller, a pivoted member, means acting on said member to hold said controller in inactive position, finger mechanism and a contact therefor, said mechanism being capable of two movements, by one of which it operates said member to render the controller active, and by the other of which it is brought into operative relation with its contact.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM O. COFFE.

Witnesses:

ALBERT H. BATES,
M. S. METZENBAUM

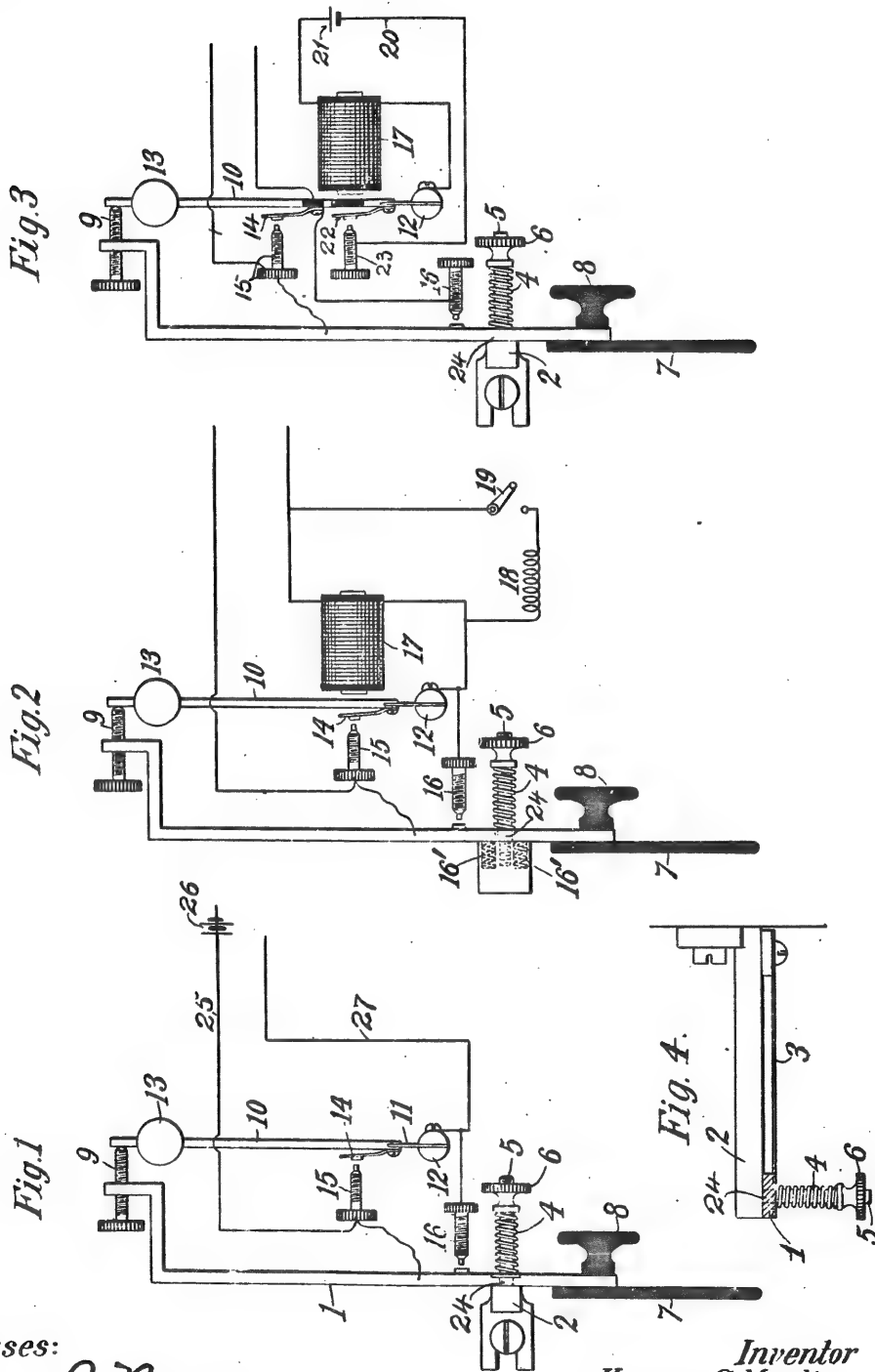
No. 767,303.

PATENTED AUG. 9, 1904.

H. G. MARTIN.
TELEGRAPHIC TRANSMITTER.

APPLICATION FILED MAY 7, 1904.

NO MODEL.



Witnesses:

Thomas J. Byrnes
S. S. Dunham

Inventor
Horace G. Martin,

by Kerr, Papp & Cooper Attys.

No. 767,303

Patented August 9, 1904

UNITED STATES PATENT OFFICE.

HORACE G. MARTIN, OF BROOKLYN, NEW YORK.

TELEGRAPHIC TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 767,303, dated August 9, 1904.
Application filed May 7, 1904. Serial No. 206,795. (No model.)

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Telegraphic Transmitters, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

In a patent granted to me on June 30, 1903, No. 732,648, I have shown and described a novel form of telegraphic transmitter the essential features of which are a key, a vibrator, and suitable electrical connections by means of which a movement of the key in one direction closes the circuit continuously to line, while a movement of the key in the opposite direction closes the line-circuit through the vibrator, which operates to send a succession of impulses continuing as long as the key remains in such position.

Briefly stated, the object of the invention is to enable operators to send Morse signals by means of a key, but by a very greatly-reduced number of movements of the latter, and thus to provide a simple and effective method of sending that avoids the intense nervous strain involved in the operation of the ordinary Morse key in rapid work. Inasmuch as the nature, object, and advantages of this system are dwelt upon at length in my patent referred to, it is unnecessary to repeat them herein, it being sufficient now to point out that the first of the above-described movements of the key which effect prolonged closures of the line is used to send the dashes, while the movement in the opposite direction, which closes the line through a vibrator, sends the dots of the Morse code. The length of the spaces and dashes and the number of the dots are thus under the direct control of the operator, while the length of the dots and their rapidity of succession is determined by the adjustment of the period of vibration of the vibrator. In the several forms of instruments shown in my said patent in illustration of the principle of the invention the vibrator-magnet is in a circuit controlled by the key, is set in operation by the current which is caused to flow in its circuit by a given movement of said key, and thrown out of operation by the interruption of such current. I have found that this plan is in many respects the most reliable and effec-

tive; but I have also devised another way of carrying out the invention in which a circuit-controller having a predetermined period of its own is directly controlled by the movement of the key—that is to say, is mechanically released or set in operation and restrained or prevented from its normal operation of sending successive short impulses over the line by the disengagement and engagement therewith of the key itself. Such a device may be made more cheaply and is more simple in construction; but for many purposes it is a very desirable instrument and secures the main advantages of my novel system. This form of transmitter, which I designate as “semi-automatic,” is exemplified in any combination of a key which by a movement in one direction sends an impulse to line proportional in length to the duration of the contact thus effected and an automatic circuit breaker or controller of the general nature of a vibrator or “buzzer” which operates to make and break the circuit at a substantially uniform but comparatively rapid rate and which is normally restrained from operation by the key, but released by the movement of the latter in a direction opposite to that utilized for sending dashes. Obviously many forms of vibrator, mechanical and electrical, may be utilized for this purpose; but in illustration of the general principle I have shown in the accompanying drawings a device in the nature of a pendulum which by the engagement of the key is normally held at such a point in its path of swing that when released by the withdrawal of the key it will be free to vibrate. This vibrator is utilized to make and break a circuit and send dots over the line, the number sent in succession being determined by the length of time the key is held out of engagement with the pendulum. In connection with the pendulum I may use an electromagnet the circuit of which is controlled by the oscillations of the pendulum itself; but this is not essential in any case in which, as with a pendulum released at some point to either side of the center of oscillation, the device possesses in itself the capability of movement which may be utilized to periodically make and break a circuit.

Referring now to the drawings, Figure 1 is a plan view of the instrument, showing the circuit connections. Figs. 2 and 3 are similar views of modifications of the same, and Fig. 4 is a detail

showing the key-lever in section.

As a convenient form of key I use a plate or bar 1, held against the flat surface of an arm or post 2 by means of a flat spring 3 and a spiral spring 4, which surrounds a stud 5. The key bar or lever 1 contains a slot through which the stud 5 passes, and the compression of the spring 4 is regulated by a screw-nut 6 on the end of the stud. By this means the key-lever is held in its central or normal position, but may be readily moved from side to side about the point 24 as a fulcrum. A hard-rubber plate 7 and a head 8 are secured to the key-lever and are of any form which makes it convenient for the operator to grasp them between the thumb and fingers. The key-lever 1 is bent at its free end at right angles and carries a set-screw 9. The end of this screw lies in the path of a vibrator which in this case consists of a rod or bar 10, supported by a flat spring-plate 11 on a stud 12. A weight or bob 13 is adjustable attached to the bar 10 to vary its period of vibration. In its normal position the key-lever holds the pendulum-bar to one side of its normal center of oscillation, with the spring 11 under light tension. If the key be shifted so as to suddenly withdraw the set-screw from engagement with the pendulum, the latter will at once start vibrating and will continue in motion for some time. This movement is taken advantage of to make and break either of the line or a local circuit by attaching to the bar a light contact-spring 14, which touches a contact-stop 15 when the bar swings over sufficiently to that side. The circuit connections to the bar 10, stop 15, and key-lever 1 are made in any suitable and well-known way, so that when the key is shifted by the operator to the right the vibrator will send dots over the line, but when the key is turned to the left it will come in contact with a stop 16 and send a prolonged impulse to line. A convenient arrangement of circuits for this purpose is shown in Fig. 1, in which 25 is a wire leading from a battery 26, and 27 is the line-wire. The wire 25 is connected to the stop 15 and also to the key-lever, while the line-wire is connected to stop 16 and also to the pendulum-lever 10. By this means the battery-currents will be sent to the line from either the stop 15 or the key-lever 1, according as contact is made between stop 15 and spring 14 or between the key-lever and stop 16. The screw-stop 9, carried by the lever 1, is of insulating material or insulated from the lever in case the pendulum-lever is of conducting material or the spring 14 not insulated from it.

In Fig. 2 substantially the elements are shown, and the operation is not materially affected by the modifications introduced. The key-lever in this figure is shown as seated on two spiral springs 16', inserted in recesses in the post 2 on opposite sides of the fulcrum of the key. These springs take the place of the flat spring 3 of Fig. 1. I have shown in this figure also an electromagnet 17 in the circuit of the pendulum and stop 15. When the pendulum has been released

by the key and closes the circuit between the spring 14 and stop 15, the magnet 17 is energized and exerts an attraction for the pendulum, which ceases the instant the circuit is broken by the separation of the contact-points. This imparts a more positive swing to the pendulum and maintains the amplitude of its vibrations. A short circuit around the magnet, maintaining a resistance 18 and a switch 19, may be used to cut the magnet out when so desired.

The arrangement shown in Fig. 3 differs from that of Fig. 2 only in having a local circuit 20 for energizing the magnet 17. This circuit contains a local battery 21 and is made and broken by an additional spring 22 on the pendulum and a stop 23. This arrangement takes the magnet 17 out of the main or sending circuit.

From the above description of the construction and mode of operation of the form of transmitter to which my present application relates it will be obvious that the vibrator and the specific means for engaging and releasing the same by the key may both be varied in many details without departure from the invention.

What I claim is—

1. In a telegraphic transmitter, the combination with a circuit-controller capable of making and breaking a circuit at a uniform rate, of a key normally engaging said controller and preventing it from operating, and a contact for said key, the key being capable of two movements from its normal position, one of which withdraws it from engagement with the controller, while the other brings it into engagement with its contact, as set forth.

2. In a telegraphic transmitter, the combination with an automatic circuit-controller capable of making and breaking a circuit at a uniform rate, of a key normally engaging said controller and preventing it from operating, means for holding said key in its normal position of engagement with the controller, and a contact-stop for said key, the key being capable of movement in opposite directions from its normal position, by one of which it releases the controller and by the other of which it engages the contact-stop, as set forth.

3. In a telegraphic transmitter, the combination with an automatic vibrating circuit-controller having a defined period of oscillation, of a key normally engaging the controller, and preventing it from vibrating, and a contact-stop for said key, the key being capable of movement in opposite directions from its normal position, by one of which it is withdrawn from engagement with the controller, whereby the latter is permitted to intermittently make and break the circuit, and by the other of which it engage with the contact-stop, as and for the purposes set forth.

HORACE G. MARTIN.

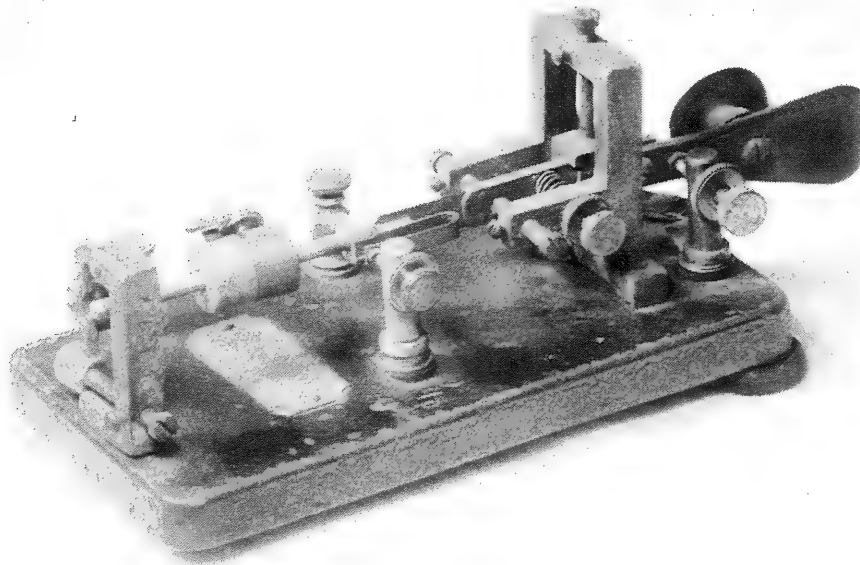
Witnesses:

M. LAWSON DYER,
S. S. DUNHAM.

Original

- Produced:** 1905 - present
Patents: 842,154 filed April 16, 1906, issued Jan. 22, 1907
1,445,226 filed Dec. 10, 1921, issued Jan. 16, 1940
Plate types: All except B1 and B2 (B3 is scarce).
Base colors: Black japan, nickel, red, green, blue, black crackle, chrome, battleship gray, gray crackle, gold-plated brass plate on base (Presentation), gold-plated steel base (Gold).
Variants: Lever designs; flat-topped damper; T damper (scarce); late pinned lever. Thin base with extension leg (scarce).

In 1905 Horace G. Martin introduced his famous "Vibroplex" telegraph key to the marketplace. In this new design, the pendulum was "carried and actuated by the key-lever." Unlike earlier release mechanisms in which the key lever merely permitted the pendulum to vibrate, the main lever of the Vibroplex actively threw the pendulum into motion, causing it to vibrate. And Martin incorporated an "independently-movable part of the key-lever" for sending dashes. The split-lever design simplified the construction of the key.



The first Vibroplex: 1905.

The nameplate on the first Vibroplex key has caused confusion concerning the date it was introduced. The four-line plate (type A1) states, on the second line, "patented Aug. 9, 1904." This led us to believe that the basis for the key was the 1904 patent, and that the Vibroplex was first marketed in that year. But as we saw in the previous chapter, Martin's 1904 patent, no. 767,303, was for a release-mechanism key that was never produced.

On the other hand, Martin's next patent, no. 842,154, clearly shows and describes the first Vibroplex key. Martin applied for this patent in April 1906. The statutory limit of patent protection during public use or sale of an invention prior to filing an application is one year; Martin, ever patent-conscious, certainly knew this. Therefore, it is most likely that Martin did not offer the Vibroplex for sale before April 1905. And the Vibroplex was first advertised in mid-1905, additional evidence that it was introduced in that year.

Then why did Martin use the 1904 date on the nameplate? Simply, I believe, to warn competitors that he intended to protect the design. Since he had not yet applied for the patent, he couldn't put "patent pending" on the plate. And he was undoubtedly loath to say nothing at all. Because his release-mechanism key was, like the new Vibroplex, a fully-mechanical design, he may have felt that reference to that patent offered some protection.

There are three items the collector must check to confirm he has a 1905 Vibroplex. First and most obvious is the long screw in the damper frame used to adjust the rest position of the swing-arm, shown in the 1906 patent drawing as part 39. Second is the use of lock screws (rather than jam nuts) in the ends of the frame arms to secure the position of the adjustable stop-screws, parts 9 and 10. (Similar lock-screws are used to hold the upper-pivot bearing screw part 7, and the damper screw part 39.) The lock screws are shown but not numbered in the drawing. Third is the first Vibroplex nameplate (type A1).

The combination of the A1 plate, damper screw and frame-arm lock-screws identifies the very first Vibroplex. A frame with an adjusting screw in the damper frame, even in combination with lock-screws in place of jam nuts, might be found on a bug with a later nameplate, but in such a case the nameplate relegates the bug to later status.

Once Martin filed his patent, he changed the nameplate to include his first two patent numbers (Autoplex and release mechanism) and the words "others pending." Then he began to simplify the design further, substituting jam nuts to lock the main lever adjustment screws, and eliminating the damper adjustment screw entirely. (Compare the 1907 and 1923 patent drawings.)

When his patent issued in 1907, Martin again changed the nameplate, adding the new Vibroplex patent number, 842,154. Over the next fifteen years, the nameplate would change many more times, but the basic design of the Vibroplex changed not at all.

Until 1921, the dash lever was essentially a straight bar, held to the main lever by a small vertical pivot pin which was inserted through a C-shaped yoke clamped on the main lever. In 1921, the Company announced the "New 1921 Improved Genuine Old Style" Vibroplex. The improvement (actually, merely a design simplification) was the attachment of the dash lever to the main pivot by tabs or lugs bent into the dash lever itself, forming a U shaped yoke.

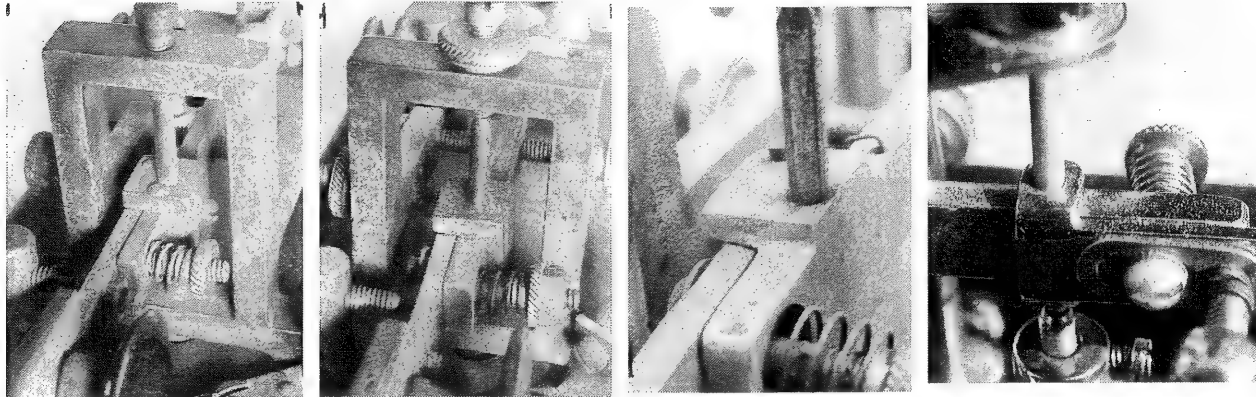
In December 1921, Martin filed a patent application for the design. As simple as this improvement was, the patent provided important breathing room for the Company in fending off competitors. The Vibroplex patent of 1907 was due to expire in 1924. Martin's patent for the improved dash lever attachment, no. 1,445,226, was issued in February, 1923.

In addition to the original thin main lever with the C-shaped yoke held to the lever by a screw and the final 1921 Improved design, there are also a thick lever type (probably second in order) in which the main pivot pin itself retains the C-yoke, and a (probably third) design which used a cast main lever with integral cast tabs through which the dash lever pin was inserted.

Between 1929 and 1936 (years are approximate) the Original was offered with an optional red, green or blue base, in addition to the standard black japanned or optional nickel plated base. Actually, in most cases the color was applied over an already black japanned base; the black is

usually obvious when the bug is turned over. In 1939, the black japan finish gave way to a black crackle (or wrinkle) paint on the base. (Base finishes are summarized in Appendix G).

Prior to 1940 the Vibroplex had been referred to in advertising as the "Old-Style" bug, then the "Improved" bug. Now, perhaps to be able to distinguish it from the five other models available in 1939 - 1940, advertising began referring to the "Original" model. New finger pieces were designed. The wedge-shaped fiber paddle became a plastic oval; the knob gained a more modern appearance. And a "De Luxe" version appeared. (The Deluxe models are covered in detail in a later chapter.) Finally, in the late 1950's, the Standard base color was changed to a gray crackle finish. Appendix G provides a summary of base finishes.



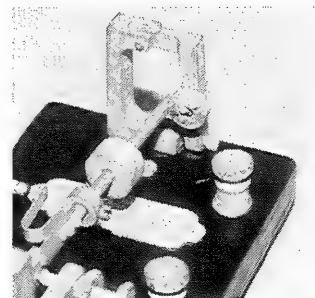
Lever variations (L - R): thin lever, thick lever, cast lever and Improved lever.

The Presentation, a "super De Luxe" version of the Original, appeared as a separate model in the late 1940's; today it is considered a variation of the Original. The Presentation is covered in a later chapter.

The Original is now the only bug made by Vibroplex, in four models: Presentation Gold (gold-plated steel base), Presentation (gold-plated brass plate on base), Deluxe (chrome-plated base), and Standard (black texture painted base). The first three incorporate a jewel bearing in the pivots; the Standard omits this feature.

Collectibles and Oddities

The earlier, the better, of course. And a collector could fill a long shelf with just the variations of this one model. There are the several base colors and the various design changes. An unusual, "flat-topped" L-style damper was used on some Original model bugs around 1915 (shown at right). This damper has an adjustment screw in the swing-arm (rather than the damper frame), and the serial number is stamped *inside* the damper frame upright. Contributing to the unusual nature of these Originals, a new serial number sequence was started with these keys, beginning with 50000.

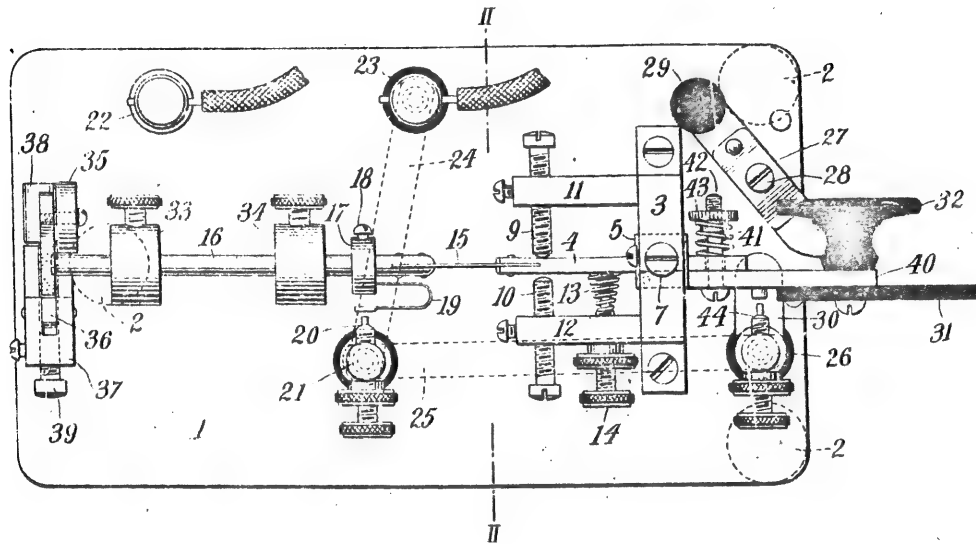
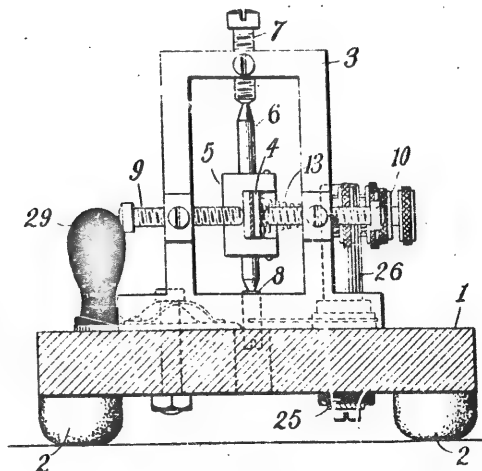
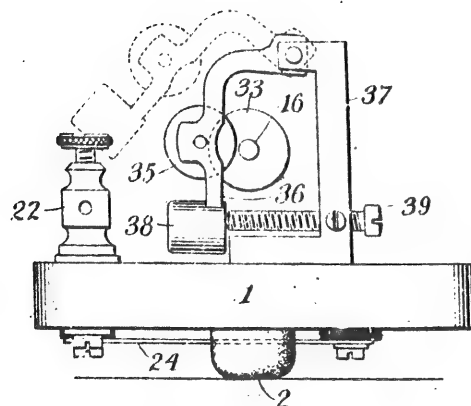


Another antiquated feature re-appeared in 1939. Around that time, years after the introduction of the Improved Vibroplex with its pivot tabs bent into the dash lever, a few keys reverted to the pinned dash lever (thick lever type). There seems to be no reason for this brief change; it was abandoned as quickly as it appeared.

No. 842,154.

PATENTED JAN. 22, 1907.

H. G. MARTIN.
TELEGRAPH TRANSMITTER.
APPLICATION FILED APR. 16, 1906.

Fig. 1*Fig. 2**Fig. 3*

Witnesses
Raphael Ketter
Ad. Dunham

H. G. Martin, Inventor

By his Attorneys
Kerr, Page & Cooper

UNITED STATES PATENT OFFICE.

HORACE G. MARTIN, OF NEW YORK, N. Y.

TELEGRAPH-TRANSMITTER.

No. 842,154.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed April 16, 1906. Serial No. 311,832.

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Telegraphic Transmitters of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

In my prior patent, No. 767,303, dated August 9, 1904, I have described and claimed a telegraphic transmitter, the essential features of which are a key, a vibrator, and suitable electrical connections, by means of which the movement of the key in one direction closes the circuit continuously to the line, while a movement of the key in the opposite direction closes the line-circuit through the vibrator, which operates to send a succession of impulses as long as the key remains in such position. The first movement of the key is used to send dashes while the second movement sends dots. The lengths of the spaces and dashes are thus determined directly by the operator, likewise the number of dots, which continue to be sent as long as the key is held in the proper position; but the length of the impulses which produce the dots and their rapidity are determined by the adjustment or regulation of the period of vibration of the vibrator. The transmitter just described lessens the number of manual movements required in Morse sending, and hence greatly reduces the labor involved.

The present invention operates on the same general principle as the above, but involves certain features of construction and arrangement which materially improve the apparatus, more particularly in respect to simplicity, compactness, and durability.

The invention will be better understood by reference to the annexed drawings, in which is illustrated the preferred embodiment, wherein—

Figure 1 is a plan view of the transmitter, Fig. 2 is a section on line II II, and Fig. 3 is an end view.

The apparatus is conveniently mounted on a base 1, which may be of iron or other suitable material provided with insulating-feet 2. At one end of the base and in electrical connection therewith is a frame or standard 3. Through this frame extends a key-lever 4, carried by a yoke 5,

which is in turn mounted on a vertical pivot 6, working in upper and lower bearing-screws 7 8, respectively, so that the key-lever can be shifted in either direction horizontally between screw-stops 9 10, carried by arms 11 12, extending from the sides of the frame or standard 3. The key-lever is normally held in contact with the stop 9 by a spring 13, which bears also against a screw 14, working in the arm 12, so that the tension of the spring can be readily adjusted.

Carried by the key-lever in line therewith by means of an intermediate flat spring 15 is a vibrator or pendulum 16, which carries at a point near the spring 15 a collar 17, adjustable longitudinally on the pendulum and secured in adjusted position by a set-screw 18. Carried by the collar is a light U-shaped spring-contact 19, the free end of which when the key-lever is in its normal position lies opposite but spaced slightly from a stationary contact 20 in the form of a screw working in a post 21 so that the said stationary contact can be adjusted at will toward or from the spring-contact.

The external circuit is connected to binding-posts 22 23, the former of which is in electrical connection with the base, and hence the key-lever 4 and spring-contact 19 through the standard 3 and pivot 6, while the latter binding-post is connected by a conductor 24 with the insulated post 21, carrying the stationary contact 20. This post is connected by a conductor 25 with another insulated post 26. Inasmuch as the instrument is used on a normally closed circuit the post 26 may be connected at will with the base by a screw 28 and having on one end an operating-knob 29, while the other end is adapted to slip under and in close contact with a clip 30, extending from the post 26.

The operation of the instrument will now be readily understood. If the key-lever be grasped by the thumb and finger pieces 31 32 and swung away from the stop 9, it will be checked suddenly by striking the stop 10. The inertia of the vibrator 16 will, however, cause the same to swing farther against the tension of the flat spring 15 and bring the contact-spring 19 against the stationary contact 20. The inertia of the vibrator having been overcome the latter is thrown back, flexing the spring 15 backward until the momentum of the vibrator in this direc-

tion is overcome, whereupon the vibrator flies forward again and brings the spring 19 again into contact with the screw 20. This movement of the vibrator back and forth is kept up for a considerable time, as long as the key-lever remains against stop 10, at a rate determined by the positions of the adjustable bobs or weights 33 34 on the vibrator. Hence if the switch 27 is open the rapid make and break of the circuit at contacts 19 and 20 will send a succession of short impulses or dots over the line to the distant receiving instruments. When the desired number of dots have been sent, the operator throws the key-lever back to its initial position, thus carrying the vibrator too far from the contact 20 for the spring 19 to strike the latter. When in this position the oscillations of the vibrator are checked and the vibrator soon brought to rest by the latter striking a dampening-weight 35 in the form of a button or disk loosely supported in the path of the vibrator by an arm 36, depending from and pivoted to a support 37. The lower end of the arm carries a weight 38 to maintain it in its depending position, which is determined by a screw-stop 39, extending through the support 37 and against the weight 38.

For the purpose of sending long impulses of current corresponding to dashes the key-lever is made in two parts, the outer of which, 40, carries at its outer end the finger and thumb pieces 32 31. At its inner end the part 40 is pivoted to the yoke 5, but is yieldingly held flat against the main part of the lever by a coil-spring 41, surrounding a screw 42, which projects from the part 40 through the main part of the key-lever. The spring bears at one end against the said main part and at its other end against an adjusting-nut 43, by which the tension of the spring can be readily adjusted. It is clear that when the part 40 is moved to the right by the operator the key-lever will act as a unit or as one piece and will be checked by the stop 10, as above described. When, however, the member 40 is moved to the left, the main part of the key-lever is simply pressed against the stop 9 and cannot move. Hence the member 40 will swing on its pivot against the tension of spring 41, independently of the rest of the key-lever and will strike the end of an adjustable screw-contact 44, carried by the post 26. The circuit is thus closed independently of the dot-contacts 19 20 and will continue closed as long as the member 40 is kept against the contact 44, thus sending a prolonged impulse or dash of corresponding duration. To make a space, the key-lever is simply held in its initial position, as shown in Fig. 1, for the necessary length of time.

From the foregoing it will be seen that while the sending of dots, dashes, and spaces is under the control of the operator in the actual making of the dots, which is the most fatiguing part of the operator's work with the ordinary Morse key, my device is in a sense automatic. This result is in general the same as that attained by

the instrument shown in my prior patent mentioned above. In the present form, however, the vibrator is carried and actuated by the key-lever, while the two movements of the key-lever in my earlier device are here secured by making the lever in two parts, as described, which makes the lever flexible, as it were. This construction is simple, positive, and certain in operation and produces an instrument pleasing in appearance and easy to operate. It is clear, of course, that the form herein specifically illustrated is merely one of the numerous embodiments of which the invention is capable.

What I claim is—

1. In a telegraphic transmitter, the combination of a key-lever, a vibrator carried and actuated by the key-lever, and a pair of contacts constituting terminals of an electric circuit, one of said contacts being carried by the vibrator and the other being in position to be engaged by the first, as set forth.

2. In a telegraphic transmitter, the combination of a key-lever, a vibrator, a spring between the key-lever and the vibrator whereby the latter may be set in vibration by the key-lever, and a pair of contacts constituting terminals of an electric circuit, one of said contacts being carried by the vibrator and the other being located in position to be engaged by the first, as set forth.

3. In a telegraphic transmitter, the combination of a key-lever, a vibrator carried and actuated by the key-lever, a pair of contacts constituting terminals of an electric circuit, one of said contacts being carried by the vibrator and the other being located in position to be engaged by the first, and means for making and breaking the circuit independently of the vibrator, as set forth.

4. In a telegraphic transmitter, the combination of a key-lever, a vibrator carried by the key-lever and adapted to be set in vibration by movement of the key-lever from its normal position, a pair of contacts constituting terminals of an electric circuit, one of said contacts being carried by the vibrator and the other being located in the path of the first, and means for checking the movement of the vibrator when the key-lever is in its normal position, as set forth.

5. In a telegraphic transmitter, the combination of a key-lever, a pair of stops on opposite sides of the key-lever, a spring holding the key-lever yieldingly against one of said stops, a spring-supported vibrator carried by the key-lever, and a pair of contacts constituting terminals of an electric circuit, one of said contacts being carried by the vibrator and the other being located in the path of the first, as set forth.

6. In a telegraphic transmitter, the combination of a two-part key-lever adapted to be moved as a unit in one direction, part of said key-lever being adapted to be moved independently in the other direction, a vibrator carried by the key-lever and adapted to be set in vibration by the movement of the key-lever as a unit, a pair of

contacts constituting terminals of an electric circuit, one of said contacts being carried by the vibrator and the other being located in the path of the first, and means actuated by the independently-movable part of the key-lever for making and breaking the circuit independently of the vibrator, as set forth.

7. In a telegraphic transmitter, the combination of a two-part key-lever movable as a unit in one direction, part of the key-lever being movable independently in the other direction, a stop to limit the movement of the key-lever as a unit, a spring-supported vibrator carried by the key-lever, whereby the vibrator will be set in vibration when the key-lever strikes the said stop, a pair of contacts constituting terminals of an electric circuit, one of said contacts being carried by the vibrator and the other being located in the path of the first, and means actuated by the independently-movable part of the key-lever for making and breaking the circuit independently of the vibrator, as set forth.

8. In a telegraphic transmitter, the combination of a key-lever consisting of two parts pivoted together and yieldingly held to move as a unit in one direction, a stop limiting the movement of the key-lever in one direction, whereby part of the key-lever may be moved independently in the other direction, a vibrator carried by the key-lever and adapted to be set in vibration by the movement of the key-lever as a unit, a pair of contacts constituting terminals of an electric circuit, one of said contacts being carried by the vibrator and the other being located in the path of the first, and means actuated by the independently-movable part of the key-lever to make and break the circuit independently of the vibrator, as set forth.

9. In a telegraphic transmitter, the combination of a key-lever, a pair of stops between which the key-lever is movable, a vibrator

spring-supported by and in line with the key-lever, and a pair of contacts constituting terminals of an electric circuit, one of said contacts being carried by the vibrator and the other being located in the path of the first, as set forth.

10. In a telegraphic transmitter, the combination of a key-lever, a stop against which the key-lever is yieldingly held, a second stop limiting the movement of the key-lever away from the first stop, a vibrator spring-supported by the key-lever, adapted when vibrating to make and break an electric circuit, and means for checking the movement of the vibrator when the key-lever is resting against the first-mentioned stop, as set forth.

11. In a telegraphic transmitter, the combination of a key-lever, a stop for limiting the movement of the key-lever, a spring projecting from one end of the key-lever, and a vibrator carried by the spring and in line with the key-lever, adapted when vibrating to make and break an electric circuit, as set forth.

12. In a telegraphic transmitter, the combination of a key-lever, a stop for limiting the movement of the key-lever from its normal position, a vibrator spring-supported on the key-lever, whereby throwing the latter against its stop will set the vibrator in motion, means whereby the movement of the vibrator will make and break an electric circuit, and a dampener for checking the vibrator consisting of a weight loosely supported in position to be struck by the vibrator when the key-lever is in its normal position, as set forth.

HORACE G. MARTIN

Witnesses.

M. LAMSON DYER,
S. S. DUNKAM.

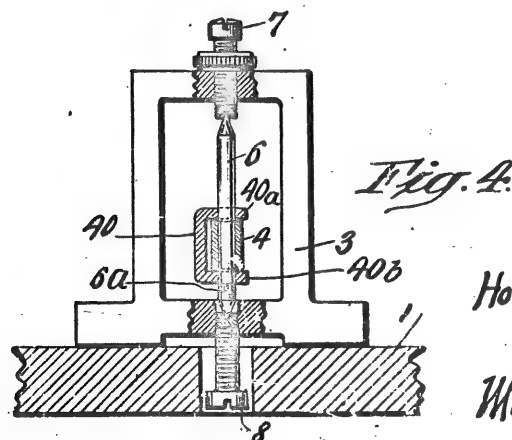
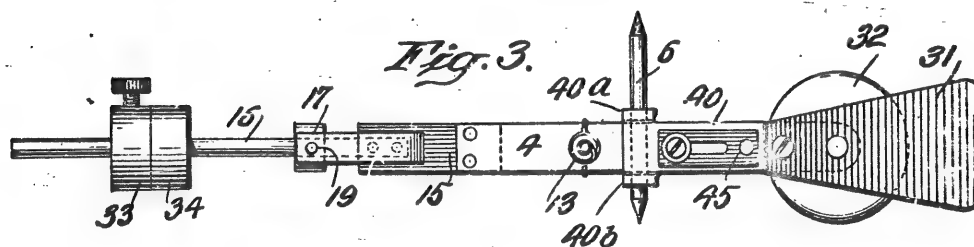
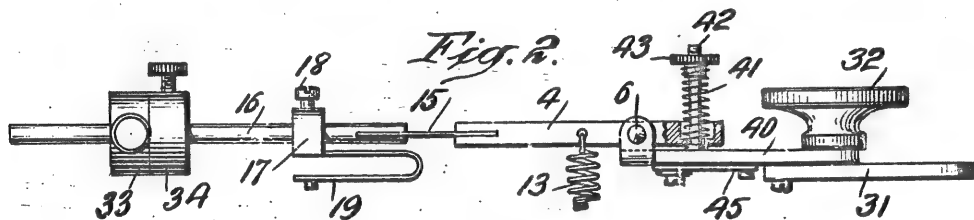
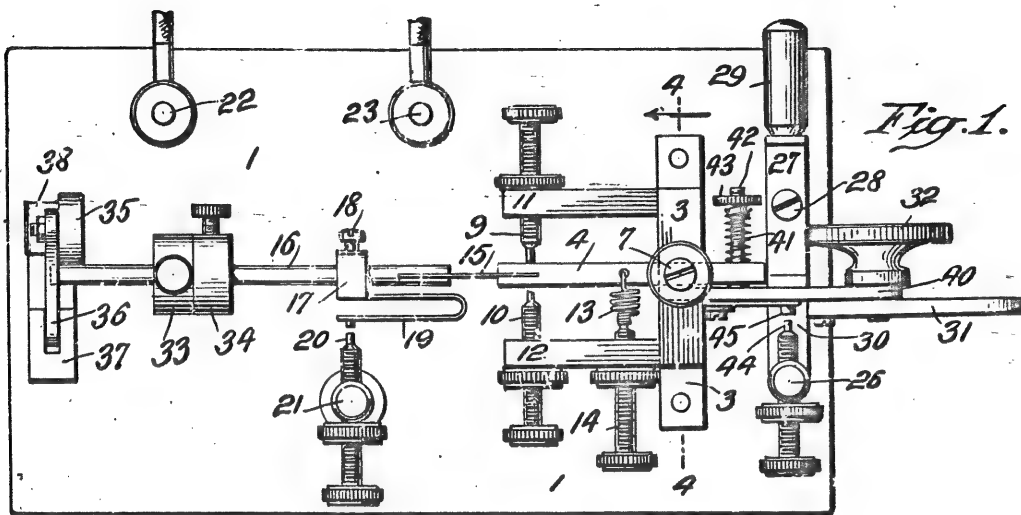
Feb. 13, 1923.

H. G. MARTIN

1,445,226

SEMI-AUTOMATIC TELEGRAPHIC SENDING MACHINE

Filed Dec. 10, 1921



Horace G. Martin, INVENTOR.

BY
Murray Corrington,
ATTORNEY

Patented Feb. 13, 1923.

1,445,226

UNITED STATES PATENT OFFICE.

HORACE G. MARTIN, OF BROOKLYN, NEW YORK.
SEMI-AUTOMATIC TELEGRAPHIC SENDING MACHINE.
Application filed December 10, 1921. Serial No. 521,363.

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at No. 975 East Ninth Street, borough of Brooklyn, city and State of New York, have invented new and useful Improvements in Semiautomatic Telegraphic Sending Machines, of which the following is a specification.

My invention relates to improvements in semiautomatic telegraphic sending machines, and more particularly to a simplified construction of the operating or handle lever and its combination with the main or vibrator lever of such machines.

In the accompanying drawings Fig. 1 is a plan of a sending machine substantially like that of Martin Patent, No. 842,154, dated January 22, 1907; Fig. 2 is a plan of the main or vibrator lever and its connected parts, and the handle lever of said machine illustrating my improvement; Fig. 3 is a side elevation of Fig. 2; and Fig. 4 is an end view partly in section of Fig. 1 looking from right to left.

Referring to the drawings, in which the reference numerals are taken as far as practicable from the corresponding parts of said Patent No. 842,154, a metal base 1 (which may rest upon rubber feet) has a frame 3 secured to its upper side. A main lever 4 has a shaft or spindle 6 thrust through a hole therein, said shaft or spindle being journaled in screws 7 and 8 in frame 3 (Fig. 4). Screws 9 and 10 in arms 11 and 12 of frame 3 regulate the throw of main lever 4 and its connected parts. Spring 13 whose tension may be regulated by screw 14 holds lever 4 normally against stop 9.

A vibrator spring 15 has one end secured in main lever 4 and carries on its other end a vibrator bar 16. A metal ring 17 slides on bar 16 and has a locking screw 18, and it has secured thereto a U-shaped contact spring 19 adapted to cooperate with a contact screw 20 in a post 21 which is secured to but insulated from base 1. Weights 33 and 34 are carried on bar 16 and may be held by their respective screws at any point thereon. Posts 22 and 23 are for connecting the apparatus in circuit. Switch parts 27 to 30, inclusive, and parts 33 to 39, inclusive, serve the same purposes as those similarly numbered in said Patent 842,154, and forms no part of my present invention.

Operating or handle lever 40 is made of one piece and has ears or lugs 40^a and 40^b bent at right angles thereto with holes therein, so that it

may form a U-shaped yoke about lever 4 and be hung and moved upon shaft or spindle 6. In putting the parts together lever 40 is put in place with lugs 40^a and 40^b above and below lever 4, and shaft 6 is then forced through the holes in said lugs and lever 4, fitting the former holes loosely and the latter very tightly so as to prevent lever 4 from slipping down on shaft 6. Spring 41 on bolt 42 and having its tension regulated by nut 43 holds lever 40 normally against lever 4. Lever 40 may have insulated thumb and finger pieces 31 and 32 thereon, and it also carries an electrical contact 45 adapted to cooperate with a movable contact 44 in post 26.

It is understood that line post 22 is in electrical contact with base 1 and through the parts connected therewith with contacts 19 and 45; and that line post 23 and posts 21 and 26 with contacts 20 and 44 are all in electrical connection with one another, and while secured to base 1, are insulated therefrom, all as in the manner set forth in said Patent 842,154.

In operation for sending a message the operator moves handle lever 40—31 and the right hand end of lever 4 to the right (away from observer) on shaft 6, compressing spring 13, until the opposite end of lever 4 strikes stop 10. This sets vibrator bar 16 and connected parts in vibration and causes a series of makes and breaks of the circuit between 19 and 20 for sending "dots" of a message, the number of which is determined by the length of time the operator holds the parts in that position. Letting go of the handle 40 permits spring 13 to return the parts to their normal positions. To send the "dashes" of a message, the operator moves handle 40—31 to the left bringing contacts 44—45 together. In this movement lever 40 turns or rotates on shaft 6 which fits the holes in lugs 40^a and 40^b loosely. After each "dash" spring 41 returns lever 40 to normal position.

I claim:

In a semi-automatic telegraphic sending machine, the combination of a main lever for operating a vibrator bar and a contact, a handle lever having ears or lugs bent into a U-shaped yoke about said main lever and a spindle inserted loosely through holes in said lugs and rigidly through said main lever and having its ends journaled in bearings, whereby said handle lever may or may not cause the operation of said main lever and vibrator bar according as it is moved in one direction or the other

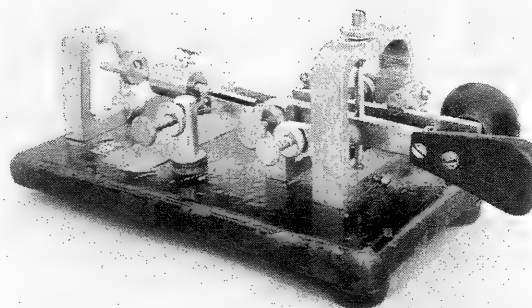
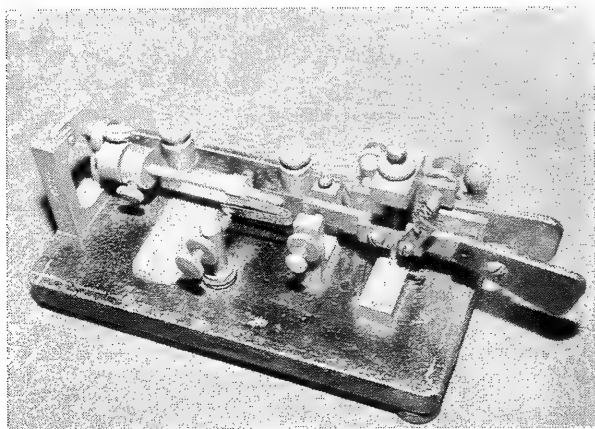
HORACE G. MARTIN.

Double Lever

Produced: 1907 - 1926
Patents: None
Plate types: B1 and B4 - D3.
Base colors: Black japan.
Variants: Frame style; base thickness; circuit closer mount.

In the Double Lever key, the dot and dash levers are entirely separate and independent. Horace Martin recognized the use of independent dot and dash levers as early as 1902, in his Autoplex patent application. In figure 4 of that patent, he shows two simple hand keys. One is wired to produce automatic dots by means of the electromagnet. The other key bypasses the electromagnet and is used to make dashes. The 1907 Double Lever key was itself never patented.

The idea behind the Double Lever key may have been to eliminate "split dots," a common problem with the semi-automatic key design. In the Autoplex patent, Martin discussed the use of independent, separate dot and dash keys, "instead of these functions being performed by movement of a single key in opposite directions."



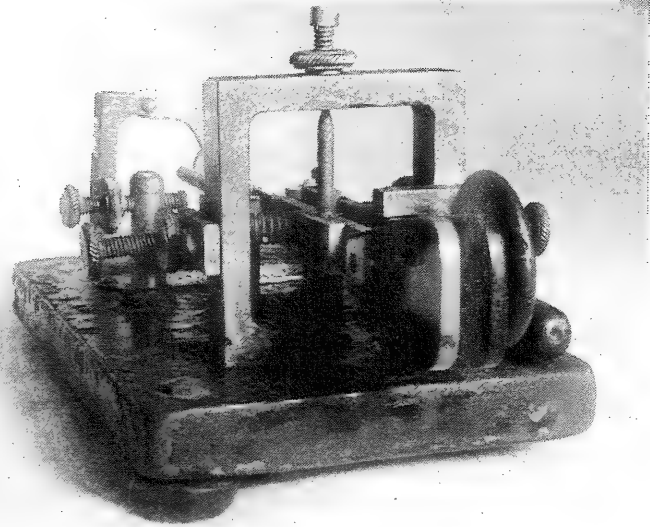
Early Norcross design (L), and late New York design (R).

Martin first offered a Double Lever Vibroplex in 1907 or 1908 while operating under the United Electrical Manufacturing Company umbrella in Norcross, Georgia. The early ones have been found with both a heavy sheet-metal "thin" base, and the usual cast-iron "thick" base. These also have what might be called a "half frame" holding the pivot: There is no left vertical side to the frame. The late Norcross Double Lever keys have a complete, rectangular (almost square) frame. This design was continued in Atlanta, where Martin (doing business as Martin Manufacturing Company) moved in 1908 after the collapse of the United Electrical Manufacturing Company. (The two known Atlanta keys are both Double Lever models.)

Horace Martin returned to the Northeast in late 1910. He soon entered into an arrangement with James Eugene Albright, who had a typewriter shop at 253 Broadway in New

York, under which Albright would be Martin's sales agent. Martin himself settled in East Rutherford, New Jersey, and applied himself to the Vibroplex key. At first, he made only Double Lever models, as he had in Atlanta. The one-piece square (roughly two inches wide and high) frame of the late Norcross/ Atlanta/ early New York Double Lever eventually gave way to a more rounded shape with the interior cut away in a cloverleaf design.

There are three general variations of the New York Double Lever key. The first (B1 plate) model has the square frame, and the pivot of the circuit closer lever is centered in the lever (that is, between the circuit closer knob and the ground tab). The second variety (B4 plate) also has the square frame, but the circuit closer lever pivots at the far end, opposite its knob (this style is shown at right, and also in the ad from the June 1916 *The Railroad Telegrapher* shown at page 74). The frame of the last version (C-style nameplates) has rounded "shoulders" with the inside of the frame cut out in a roughly cloverleaf



Transitional style with square frame.

pattern; it also has the late style circuit closer with the pivot at the far end (shown on opposite page). As with most Vibroplex models, unusual combinations of these features may be expected.

The serial numbering of the Georgia Double Levers is erratic. Some have no number; numbers on the others are generally outside of the expected sequence on the previous New York (A style) plates. At this point it almost seems that Martin was having second thoughts about serial numbering. It's not surprising, then, that none of the B1-plate New York keys (all Double Levers) are numbered.

The next run of Double Lever keys carry the B4 plate (as do other models), and have 5000-series serial numbers preceded by a "D". (This would later be echoed by the "B" series numbering for the first No. 4 Blue Racers.) Finally, later Double Lever keys have C and D-style plates and are within the usual sequential numbering system of the other key models.

The Double Lever key was offered until the mid-1920's with either a black japan or optional nickel plated base finish. But the "old style" Vibroplex had long since proven its worth, perhaps based on ease of operation and simplicity of manufacture. Very few Double Lever keys were sold after 1920.

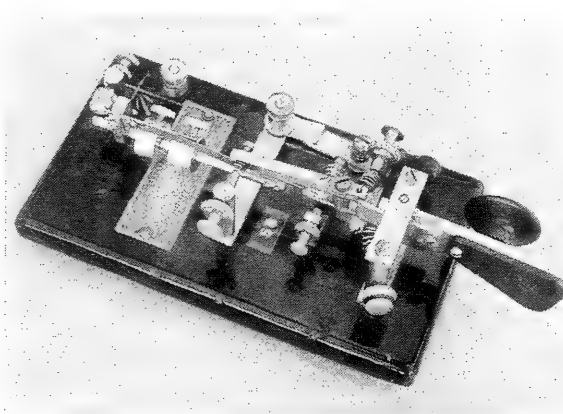
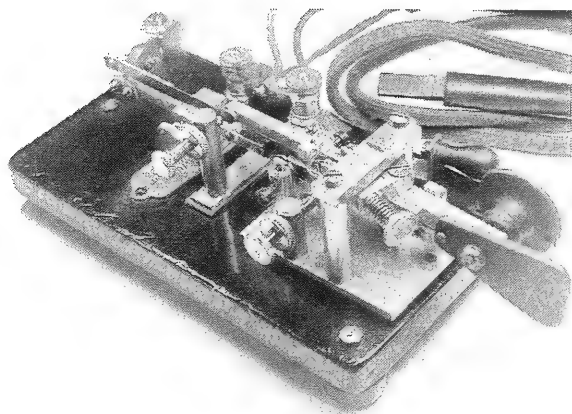
Collectibles and Oddities

Any Double Lever model or variation will enhance a collection of Vibroplex keys. The Double Lever key is one of the scarce Vibroplex models, ranking third behind only the rare Midget and the Upright. At this level, the collector doesn't get overly selective about what he will accept. But the patient and persistent collector can reasonably hope to add a New York model to his collection. The Georgia Double Lever keys, on the other hand, are unquestionably rare, and luck will play an important part in finding one.

Model X

Produced: 1911 - 1923
Patents: 1,042,457 filed July 1, 1911, issued Oct. 29, 1912
1,043,449 filed Oct. 27, 1911, issued Nov. 5, 1912
Plate types: B2 - D2
Base colors: Black japan, nickel plate.
Variants: Early (square pendulum); Improved (round pendulum).

In 1911, Martin applied for two patents. Both show that he was working toward a way to eliminate the separate dot and dash contacts. The first, filed in July, used a sort of duplex contact arrangement. This design used a one piece key lever. It wasn't quite down to one contact; although there was only one moveable contact carried by a reed on the pendulum, it was a two-sided contact. The stationary dot and dash contacts on either side of the pendulum were connected mechanically and electrically by a horse-shoe shaped support. This design was never put into production.



Early style (L) and "Improved" model (R).

In October of 1911, Martin filed another patent application. In it, he split the key and pendulum levers. The resulting articulated lever was a more complex arrangement than the previous design, but Martin had achieved his goal of a single contact. This is the version that was produced and advertised from mid-1911 as the "1912 Model" Vibroplex. In his ads, Martin described it as a Single Lever Direct Point transmitter; it soon became known as the Model X. Martin seems to have been proud of his new key; for two years after its introduction he produced nothing but the Model X.

The Model X was offered with the usual black japan or optional nickel plated base finishes. There are two basic variations of the Model X; although there are many differences

between them, collectors typically refer to them by the cross-sectional shape of the pendulum. On the early style, it is square. The later style, which appeared in 1919 and was referred to as the "Improved" Model X, has a round pendulum. Some of the differences are listed here:

	Early Model X	Improved Model X
Pendulum	square	round
weights	square	round
damper	T type	post, screw and jam nut
frame base	large	narrow

Since the leaf or flexible arm which carries the contact is affixed to the pendulum at its far end, the weights are captive on both models; their position can be adjusted, but they cannot be removed from the pendulum without first removing the contact arm.

At first, the mounting holes for the rubber feet were drilled completely through the base; a nut on the top of the base holds the screw captive. This changed around 1915, when blind holes and shorter screws were used, giving the Model X a neater appearance.

The damper commonly found on the Improved Model X is a kind of cheap T type. It looks like someone's crude replacement for missing parts, but it occurs too regularly to be anything but factory issue. One collector described it as "a primitive damper consisting of a vertical post with an adjusting screw through it, without any provision for absorbing shock. In other words, the damper is just like a dot contact post, dot screw and jam nut, without the contact."

The pivot frame and lever adjustments are mounted on a large base on the early model, as shown in patent 1,043,449. On the Improved model (which was not the subject of a separate patent), the frame with its narrow base carries only the pivot and the dot return spring; the lever adjustment screws are held in a separate U-bracket mounted by itself on the key base behind the frame (away from the operator).

The unhappiness of the operators using the early Model X is evidenced by the number of keys which have been modified by the removal of the dash lever (often by hack-saw) and the addition of a stationary dash contact in the usual place to the left of the main lever. The simplicity of the split-lever "old style" Vibroplex once again prevailed. After a dozen years or so, the Model X Vibroplex disappeared from the scene.

Collectibles and Oddities

The intricate design with its numerous parts makes the Model X a fascinating display piece. Overall, it ranks fourth on the scale of scarcity, well behind the Midget, Upright and Double Lever. Of the two variations, the late, round-pendulum model is harder to find; it was introduced in 1919, and very few Model X keys were sold after 1921. But in terms of looks, the square-pendulum Model X is probably more desirable. The early design has more moving parts, which contribute to eye appeal and an "old fashioned" appearance.

An unusual and rare variant of the early Model X has a square pendulum which is so large in cross-section that the words "trade Vibroplex mark Model X" could be stamped into it. There are also two different styles of weights on the early model, one in which the retaining wire goes through holes in the weight and another in which the wire goes over the weight.

H. G. MARTIN.
ELECTRIC TELEGRAPHIC APPARATUS.
APPLICATION FILED JULY 1, 1911.

1,042,457.

Patented Oct. 29, 1912.

Fig. 1.

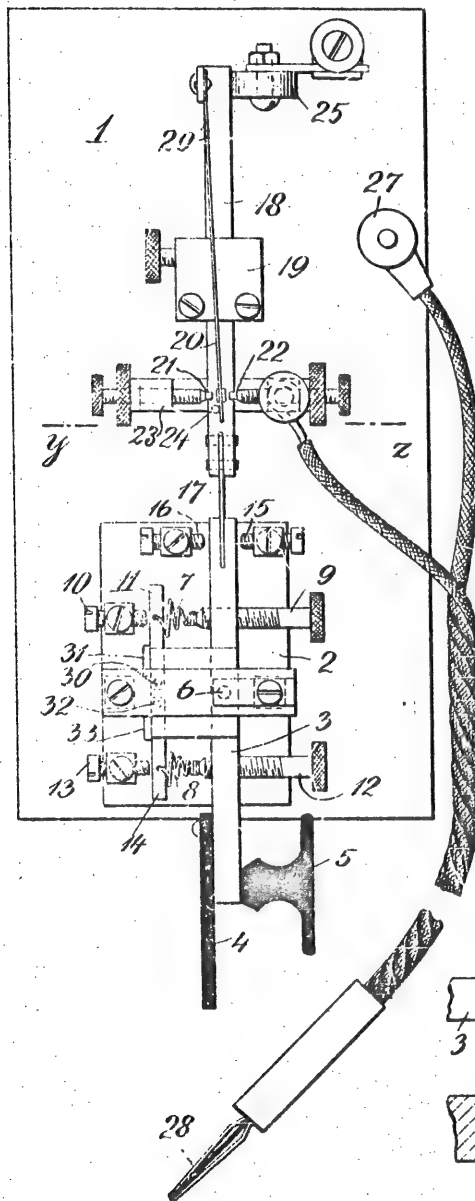


Fig. 2.

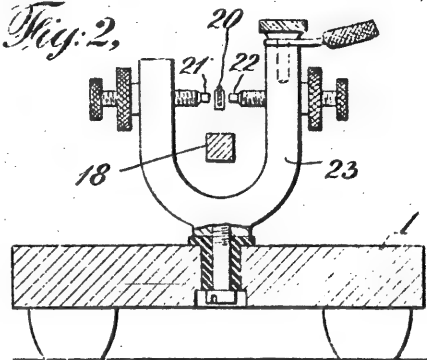


Fig. 3.

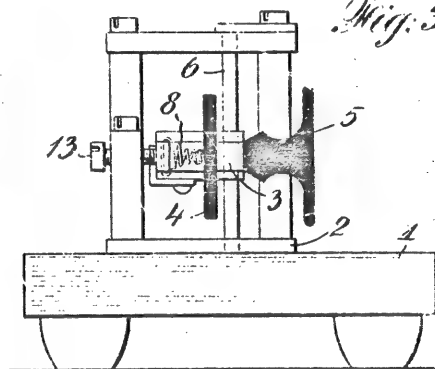
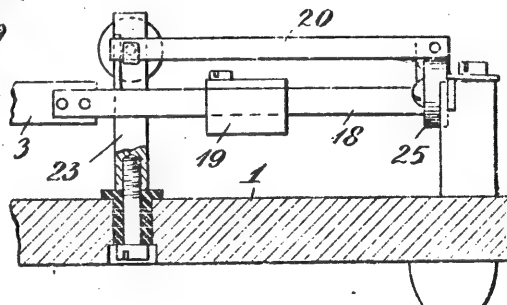


Fig. 4.



Witnesses:
Max B. A. Doring
Chas. Sinnott.

Horace G. Martin, Inventor
By his Attorney
Murray Cornington

UNITED STATES PATENT OFFICE

HORACE G. MARTIN, OF EAST RUTHERFORD, NEW JERSEY.

ELECTRIC TELEGRAPHIC APPARATUS

1,042,457.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed July 1, 1911. Serial No. 636,536.

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at East Rutherford, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Electric Telegraphic Apparatus, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

My invention relates to improvements in electric telegraphic apparatus and its main purpose is to provide means whereby the operator may send messages with less manual labor than is required with the apparatus commonly used.

Referring to the accompanying drawing, Figure 1, is a plan or top view of one embodiment of a complete apparatus; Fig. 2 is a view of a portion of the apparatus of Fig. 1 on the line Y—Z, looking upward; Fig. 3 is an end view of Fig. 1 looking upward; and Fig. 4 is a side view looking to the left of that portion of Fig. 1 above (right hand side of) the line Y—Z, omitting the two wire connections.

Considering the apparatus shown on the drawings in greater detail, Fig. 1 consists of a suitable base 1 (preferably of metal) on which rests a suitable framework 2 for mounting various working parts. A manually operated key or lever 3, having insulated parts 4 and 5 for preventing shock to the operator is to be moved preferably to the right and left, and for this purpose it is supported on a rotating vertical rod or shaft 6 pivoted in said framework, as shown in Fig. 3. Two springs 7 and 8 for returning key 3 to normal are arranged on opposite sides of shaft 6. Spring 7 may if desired be adjusted by screw 9 and have a pivoted bearing 11, and spring 8 may be adjusted by a similar screw 12 and have a pivoted bearing 14. Adjustable stops 16 and 15 may be used, if desired, for limiting the right and left hand movements of key 3. A flat spring 17 is securely fastened by one end to the key or lever 3 and by its other end to a bar or shaft 18, which may carry a movable weight 19, adjustable as to position. There is also mounted on rod or shaft 18 a spring 20 which is adapted to move at different times against the two points 21 and 22, adjustably affixed to a suitable yoke or support 23 that is secured to, but insulated from, the base 1, as shown on Fig. 2. A pin 24 may be employed to hold the contact spring 20 normally under a slight tension if desired. A suitable stop 25 for

deadening or quickly stopping the movements of the shaft 18 may also be employed. Bearing 11 for spring 7 is pivoted on a small shaft or rod 30 and is normally pressed by said spring against a stop 31 which is fastened to the under side of key 3, and the same construction is adapted for support 14 of spring 8, pivoting shaft 32 and stop 33. The parts 7, 9, 11, 30, 31 and 8, 12, 14, 32, 33 are connected to and move with key 3, and there is preferably a small space normally between parts 10 and 11, and between parts 13 and 14. Therefore, when the operator's end (4—5) of key 3 is moved to the right, spring 7 is compressed but the tension of spring 8 is not affected, and when the key is moved to the left, spring 8 is compressed but spring 7 is not affected.

Suitable wire connections 26 may be employed for connecting my apparatus with an outside electrical circuit, consisting of the usual twisted insulated wires, one of which is connected through an ordinary binding post 27 with the metallic base 1 and the other of which is connected with the insulated contact yoke 23, Figs. 1 and 2. At the opposite end is an ordinary insulated plug 28 for connection with a line wire in the usual manner. All parts of the apparatus are in electrical contact with the base 1 (and one of the wires) except insulated yoke 23 and points 21 and 22.

The operation of the apparatus will now be readily understood. When the operator desires to send a message (the plug 28 being properly connected), he places his hand upon the insulated parts 4 and 5 and moves that end of the lever 3 quickly to the right bringing the other end against stop 16 and slightly compressing spring 7. This moves shaft 18 and all parts connected therewith to the left away from the rest 25 and causes them to vibrate more or less rapidly according to the position of the weight 19, from left to right upon spring 17. With each vibration of shaft 18 spring 20 makes and breaks an electric circuit through point 21, the current flowing through one of the wires 26, post 27, metallic base 1, the supporting framework to shaft 6, lever 3, spring 17, shaft 18, and spring 20 into point 21 and insulated yoke 23, and thence by the other wire and contact plug 28 to the outside circuit. These successive makes and breaks of the circuit between spring 20 and point 21 represent the dots of an ordinary telegraphic message. The

operator holds key 3 in the right hand position until the vibrations of the parts 18 and 20 produce the required number of makes and breaks (that is, dots,) between the points 20 and 21 and then allows the key to return to its normal position by the action of spring 7, and stop 25 causes the vibrations to quickly cease. It will be observed that any required number of dots for a telegraph message may thus be made by a single movement of lever 3. When the operator desires to make a contact representing a dash in a telegraphic message, he moves key 3 to the left, bringing its other end against the stop 15 and compressing spring 8. This causes shaft 18 and contact spring 20 to move in the other direction and make the same electrical circuit through spring 20 and point 22. The lever being held in the left hand position the required length of time, the operator releases the pressure thereon and permits spring 8 to return it to normal position. By thus moving the lever to the right and left in the manner described, the operator may send any telegraphic message with less labor than required with the standard telegraphic instrument. Stop 15 may be omitted and also spring 8, as the movement of key 3 to the left puts spring 17 under sufficient tension to return the key to normal position.

I claim:

1. In an electric telegraphic apparatus, the combination of an operator's key, a free vibrator whose movements are controlled by said key, a spring directly connecting said key and vibrator and on which the latter oscillates, and a circuit controller operating with said vibrator for making both the dots and the dashes of a telegraphic message.

2. In an electric telegraphic apparatus, the combination of an operator's key, a free vibrator controlled by said key, a spring directly connect-

ing said key and vibrator and on which the latter oscillates, and means controlled by the movements of said vibrator for making and breaking an electric circuit and for producing both the dots and the dashes of a telegraphic message.

3. In an electric telegraphic apparatus, the combination of an operator's key, a free vibrator whose movements are controlled by said key, a spring forming a direct connection between said key and vibrator and on which the latter oscillates, and a circuit controller operated by said vibrator for making the dots of a telegraphic message when said key is moved in one direction and for making the dashes of said message when said key is moved in the other direction.

4. In an electric telegraphic apparatus, the combination of an operator's key movable in two directions, a free vibrator, whose movements are controlled by said key, a spring forming a direct connection between said key and vibrator and on which the latter oscillates, and two springs carried by said key for returning the same to its normal position and so arranged that the tension of one spring is increased while the tension of the other is unaffected, and vice versa, according as said key is moved in one direction or the other.

5. In a telegraphic transmitter, in combination, a free vibrator adapted to make and break an electrical circuit for producing both the dots and dashes of a telegraphic message, a key-lever for controlling the operation of said vibrator and a spring forming a direct connection between said key-lever and vibrator and on which said vibrator oscillates.

HORACE G. MARTIN.

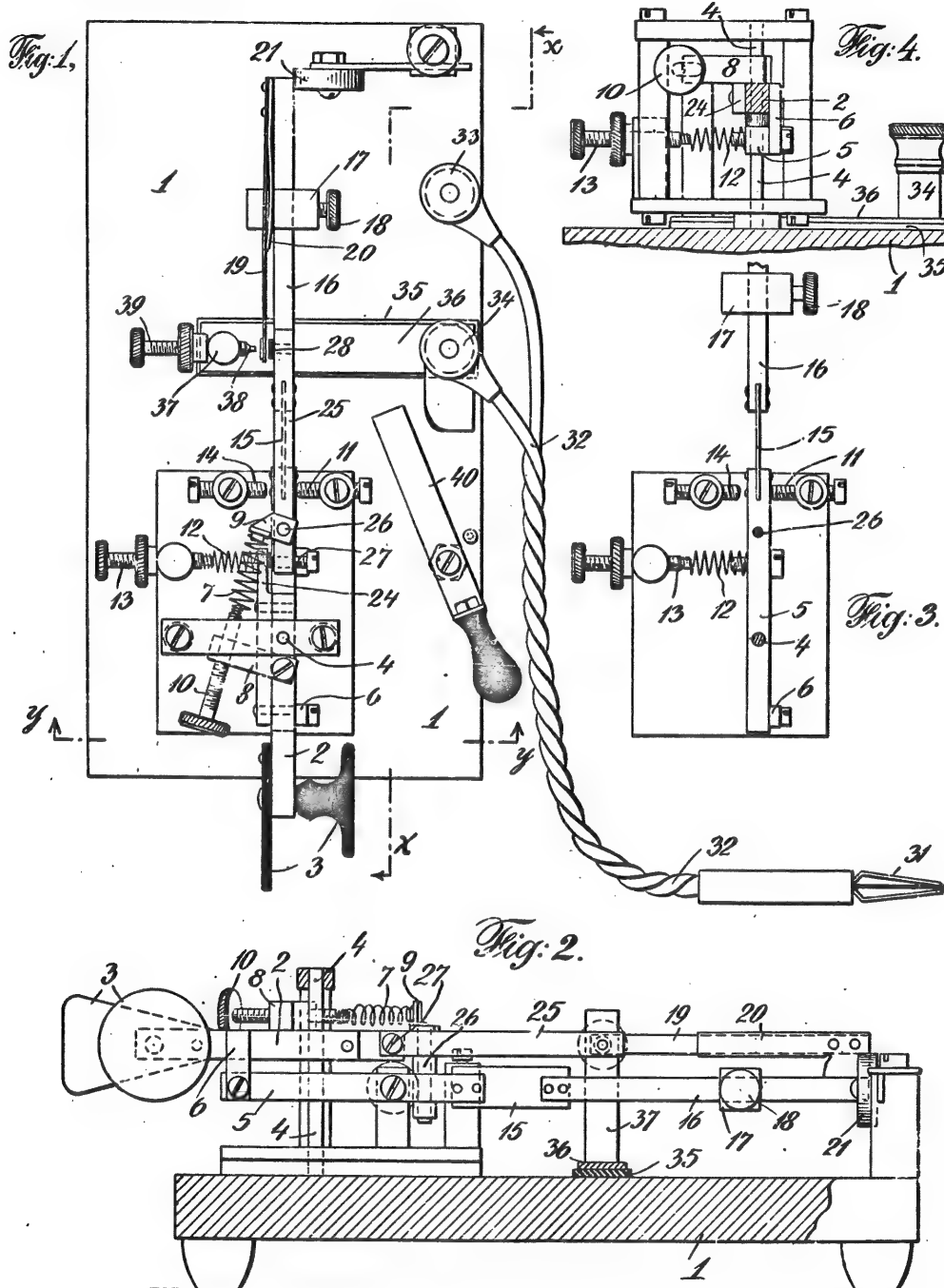
Witnesses:

MALCOLM N. BUTLER,
MURRAY CORRINGTON.

H. G. MARTIN.
ELECTRIC TELEGRAPHIC APPARATUS.
APPLICATION FILED OCT. 27, 1911.

1,043,449.

Patented Nov. 5, 1912.



Witnesses:
Max B. A. Doring
Chas. Eisenhut.

Inventor
Horace G. Martin
By his Attorney
Murray Corrington

UNITED STATES PATENT OFFICE

HORACE G. MARTIN, OF EAST RUTHERFORD, NEW JERSEY.

ELECTRIC TELEGRAPHIC APPARATUS.

1,043,449.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed October 27, 1911. Serial No. 657,194.

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at East Rutherford, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Electric Telegraphic Apparatus, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

My invention relates to improvements in electric telegraphic apparatus and its main purpose is to provide means whereby the operator may send messages with less manual labor than is required with the apparatus commonly used.

Referring to the accompanying drawings, Figure 1 is a plan of one embodiment of a complete apparatus embodying my invention; Fig. 2 is a side elevation partly in section on the line $x-x$ of Fig. 1, looking toward the left; Fig. 3 is a plan of a portion of the apparatus of Fig. 1 having certain parts removed so as to show other parts more clearly; and Fig. 4 is a sectional elevation on the line $y-y$ of Fig. 1, looking upward.

Considering the apparatus in greater detail, a suitable base 1 preferably of metal is provided, to which the working parts are attached. An operator's key-lever 2, having insulating hand pieces 3, moves from left to right on a vertical shaft 4, suitably mounted in upper and lower bearings (Figs. 1 and 2). Below lever 2 is a second lever or bar 5 which also swings from left to right upon shaft 4 and is held normally against an adjustable stop 11 by a spring 12 whose tension may be regulated by screw 13. An upright piece 6 attached to bar 5 is so arranged that when key-lever 2—3 is moved to the right bar 5 is moved in the same direction until its opposite end strikes adjustable stop 14 (Figs. 1 and 3). A shaft or pin 26 is secured to bar 5 and a small lever 25 is mounted thereon so as to swing from left to right and its movements are controlled by key 2, having for convenience an attachment 24, which, however, may be integral therewith, fastened to its side, so that one end thereof has a bearing against said lever 25 that may be made adjustable by means of screw 27 inserted in said lever. A spring 7 having bearings 8 and 9 secured to levers 2 and 25, respectively, and having its tension regulated by screw 10, holds said levers normally in the positions shown in the drawings. An insulating button 28 may be

inserted in the upper end (Fig. 1) of lever 25.

A flat, vertical spring 15 is secured to lever 5 and has attached to its opposite end a vibrating rod or bar 16, carrying a weight 17 which may be slid back and forth thereon and held at any desired point by a screw 18 (Figs. 1, 2 and 3). A suitable contact device 19 is secured to and operates with said bar 16, which in the form shown is preferably a flat spring held under a certain tension by the device 20. A stop or deadener consisting of a metal wheel or disk 21 hung loosely upon its axis is arranged to quickly stop the vibrations of bar 16 and parts connected therewith.

A suitable plug 31 for placing the apparatus in circuit is connected by suitable wires 32 with posts 33 and 34, the former being connected electrically with base 1 and the latter being secured to said base but insulated therefrom. Post 34 is connected by metal strip 36 with a post 37 which carries a contact 38 capable of regulation by screw 39. Parts 34, 36, 37, 38 and 39 are insulated from base 1 by insulation 35 (Figs. 1 and 2). A switch 40 electrically connected to base 1 normally stands in the position shown in Fig. 1, but when the handle is moved to the left, the current passes directly through the plug 31, wires 32, post 33, base 1, switch 40 and post 34, and the apparatus is in circuit but inoperative.

The operation of the apparatus will now be readily understood.

When the operator desires to send a message he moves key lever 2—3 to the right quickly till the opposite end of bar 5 strikes the stop 14 (Fig. 3). This sets bar or rod 16 and parts connected therewith vibrating horizontally upon spring 15, and causes parts 19 and 38 to make and break a series of electric contacts and send a series of impulses over the line to the receiving station, the current flowing through one of the wires 32, post 33, base 1, shaft 4, lever 5, spring 15, bar 16, contacts 19 and 38, post 37, and thence by 36 and 34 to the other wire. These impulses produce the "dots" of a telegraphic message. When a single dot is desired, key 2 is moved to the right and returned at once either by the operator or by spring 12. By holding said lever in its right hand position a longer or shorter time, a greater or smaller number of dots, as desired, will be made by the vibrations of bar 16 and contacts 19 and 38. When the operator desires to send an impulse over the line corre-

sponding to a "dash" of a telegraphic message, he moves key 2—3 to the left, which causes the attachment 24 to swing small lever 25 upon shaft 26 so that its opposite end or button 28 brings contacts 19 and 38 together closing the same circuit as pointed out above. A repetition of this movement causes any desired number of dashes. When key 2—3 is moved to the right, parts 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 24, 25, 26, 27 and 28 are also moved, and spring 12 is compressed and returns the parts to normal position when pressure on said key is removed. When said key is moved to the left, parts 8, 9, 10, 24, 25, 27, 28 and 19 are moved, and spring 7 is compressed and returns the parts to normal position as soon as pressure on the key is removed.

I claim:

In an electric telegraphic apparatus, the combination of an operator's key movable in two directions, a lever actuated by movement of said key in one direction but remaining stationary during its other movement, a vibrator actuated by movement of said lever, a stationary electric contact and a movable electric contact carried by said vibrator and adapted to produce the dots of a telegraphic message when the operator's key is moved in one direction, and means for forcing the movable against the stationary contact to produce the dashes of a telegraphic message when said key is operated in the other direction.

HORACE G. MARTIN.

Witnesses:

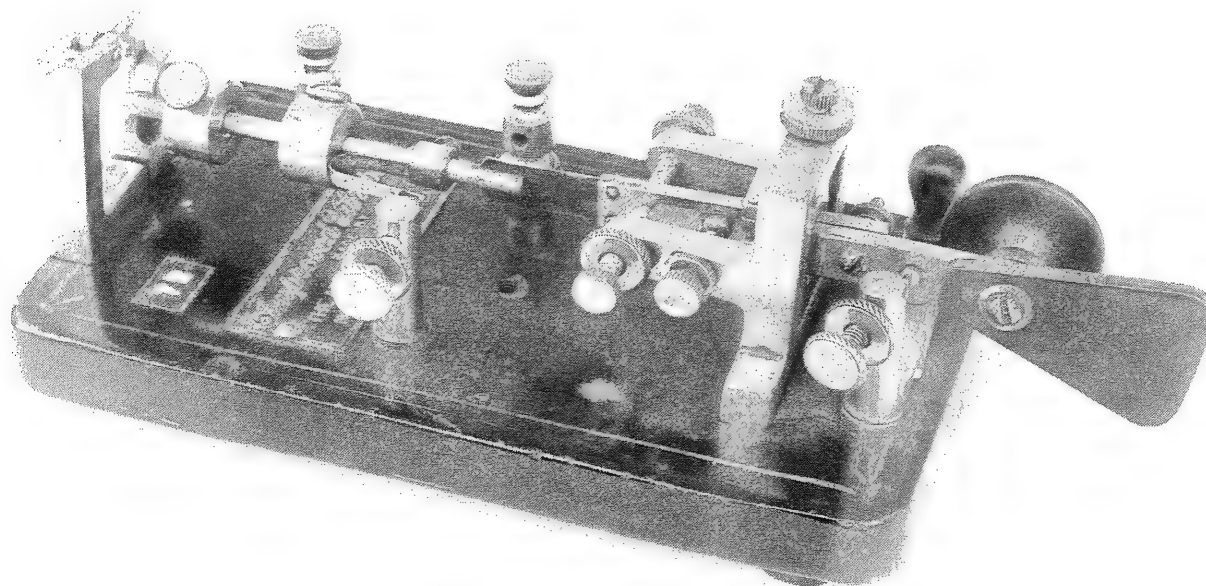
MURRAY CORRINGTON,

CHARLES EISENHUT.

Albright Bugs

Once the telegraph companies allowed their operators to use the new Vibroplex bugs, Martin's competitors rushed in with their own products. Many of these non-Vibroplex bugs were merely copies of the Vibroplex, and infringed on Martin's patents. Based on the styles, the Vibroplex seems to have been copied as early as 1906 or so, and well into the 'teens. Between about 1911 and 1915, James Eugene Albright, a typewriter and telegraph instrument shop owner located at 253 Broadway, and Horace Martin's "sole selling agent," threatened and prosecuted the manufacturers of these illegal bugs.

Albright might also have brought suit against the individual users of those bugs, but he had a better idea. He allowed the operators to use their bugs if they paid a two dollar license fee. Upon payment, a plate was affixed to the instrument allowing its continued use.



ATOZ copy of a Vibroplex Original. Note "Improved Vibroplex" nameplate.

Because the original maker's tag was removed from the key, determining the actual maker of such a "bastard bug," as they were sometimes called by the operators, is often difficult. This is especially so in the case of unadorned Vibroplex copies. Some may, in fact, have been made by small shops unknown even today. The most common one, however, is probably the "Improved Vibroplex" bug made by Max Levey's ATOZ Electric Novelty Company. Yes, Levey actually had the temerity to put that name on his knock-off.

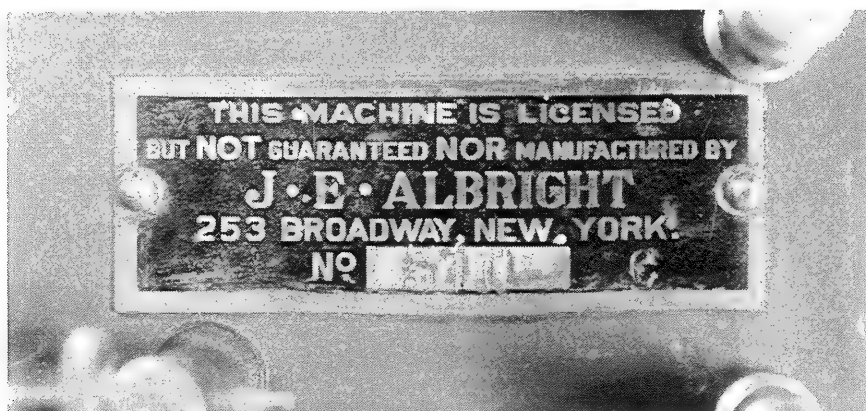
But the maker of an illegal bug is not as important to a Vibroplex collector as the license plate on it. A key with an Albright plate makes a historical addition to a collection of Vibroplex

keys. These licensed bugs are commonly called "Albright bugs" today, with the understanding that Albright did not (as the plate says) make them, but that they carry his license plate.

There are at least two styles of the Albright license plate. The most common, and probably the first, style reads:

 this machine is NOT guaranteed NOR made
 but only licensed by
 J. E. ALBRIGHT
 253 Broadway, New York
 Special No. 1234

The number in the fifth line is a stamped serial number. On other variations of this plate, the fifth line reads "W.U.T.CO. No. 1234," or "SPECIAL No. 1234 W.U.T.CO." All information apart from the serial number is engraved as an original part of the plate.



A second style of the Albright plate may at a glance appear to be the same plate as above, but the first two lines are reversed and reworded, as follows:

 this machine is licensed
 but NOT guaranteed NOR manufactured by
 J.E. ALBRIGHT
 253 Broadway, New York
 No. 123

Under Albright's aggressive business practices, Martin's patents paid off. He had the only legal keys used by Western Union and Postal Telegraph. Originally acting as agent for Martin, Albright would acquire Martin's patent rights and incorporate The Vibroplex Company under his ownership in 1915. It would be operated by the Albright family until 1978.

Albright plate serial numbers have been found from two digits up to the 2600 range. While keys carrying these plates are rather scarce, they are not so rare that the diligent collector will not eventually find one.

No. 4, Blue Racer

Produced: 1914 - 1966

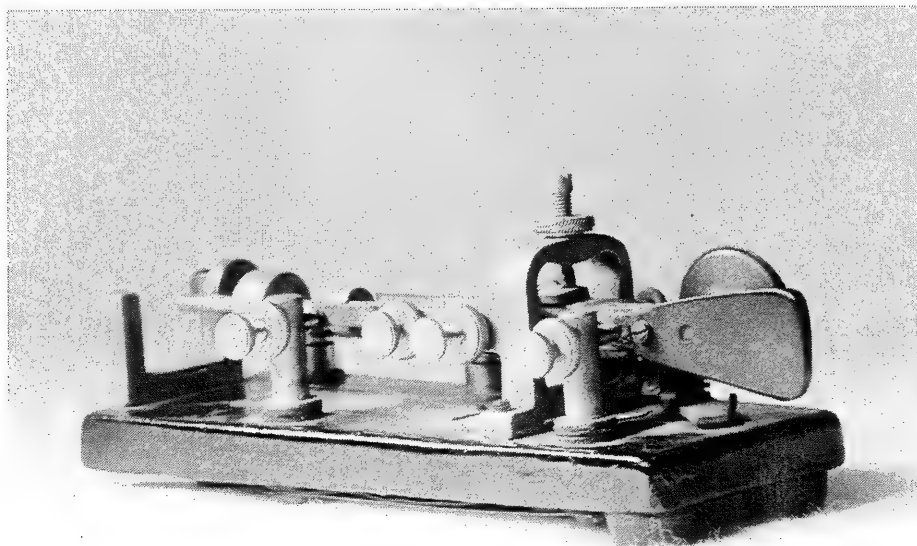
Patents: none

Plate types: B4 - D7

Base colors: Blue, nickel, black japan, red, green, blue, black crackle, chrome, battleship gray, gray crackle.

Variants: Early (U damper), late (L damper), large base option.

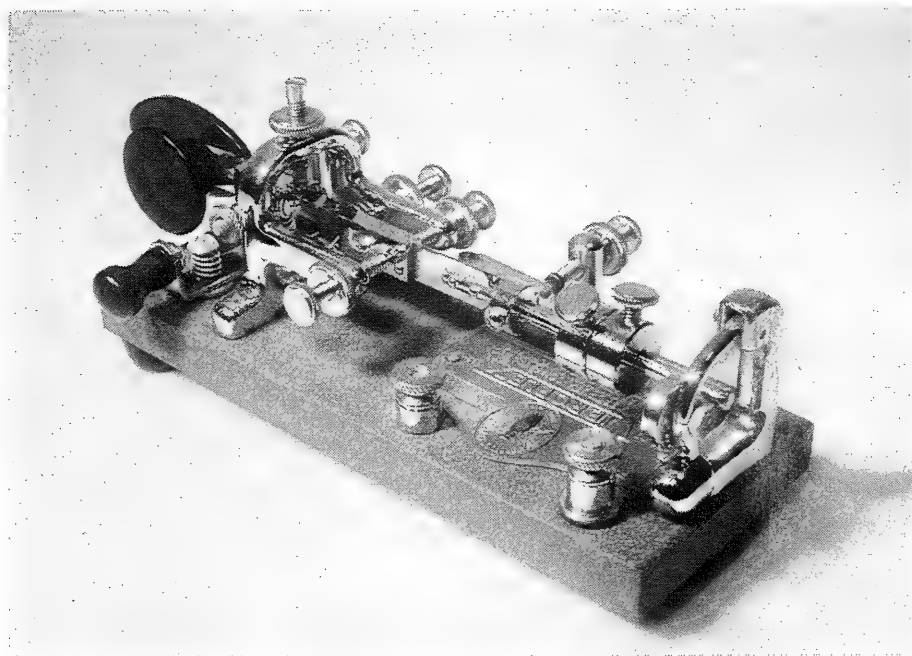
Beginning in the summer of 1914, Horace Martin seems to have embarked on a quest to reduce the space taken by a semi-automatic key on an operator's desk. In that year, he came out with the No. 4 Vibroplex. This would be followed in short order by a vertical bug (the Upright) and a very small bug (the Midget).



Early model with U damper and cloverleaf frame.

The "No. 4" designation meant that it was the fourth Vibroplex production model. By 1921 the ads were also referring to the No. 4 as the "Famous Blue Racer." Corresponding to the serial numbering practice of the Double Lever, the No. 4 was at first given its own sequence of numbers which began with the letter "B".

As designed, the No. 4 was simply a small original Vibroplex with two main differences. The base was narrowed from 3.5 to 2.5 inches, and the damper was a simple U shaped support with a damper wheel mounted on one arm of the U. The interior of the frame sported the cloverleaf pattern first found on the Double Lever. Unlike the unique Double Lever and Model X bugs, the No. 4 was the first of several near-copies of the Original design.



Late model with small L-type damper.

For the first five years or so, the standard base finish was blue enamel, with a nickel-plated base as an option; upper parts were nickel plated. Black japan then became the standard base finish. The colored-base options were offered beginning in the late 1920's. Thereafter the base finishes followed the usual chronology as for the other Vibroplex models (see Appendix G).

During WWII, an interim style appeared on the black crackle base with chromed upper parts. On this style, the U-damper has longer vertical arms with rounded ends, and the frame has an obvious squared shape. Just after WWII the U type damper and square frame were replaced by smaller versions of the L-damper and rounded frame found on the Original. The Blue Racer was discontinued in the mid-1960's.

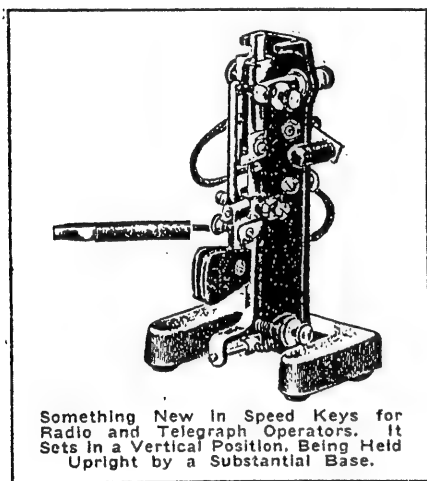
Collectibles and Oddities

The pre-WWII No. 4 Blue Racer, with the U damper, is the more desirable of the two variations. And of these early models, the earliest, with a blue base, is the most highly regarded.

An unusual optional model is the large-based No. 4. The "pocket size" No. 4 model was touted as being "half the size of the Old-Style" Vibroplex, and yet as an option it was offered on the 3.5 inch old-style base. Operators probably decided that if they wanted a bug with a large base, they'd get the original model. Naturally, the large-based No. 4 is scarce.

A VERTICAL TELEGRAPH SPEED KEY.

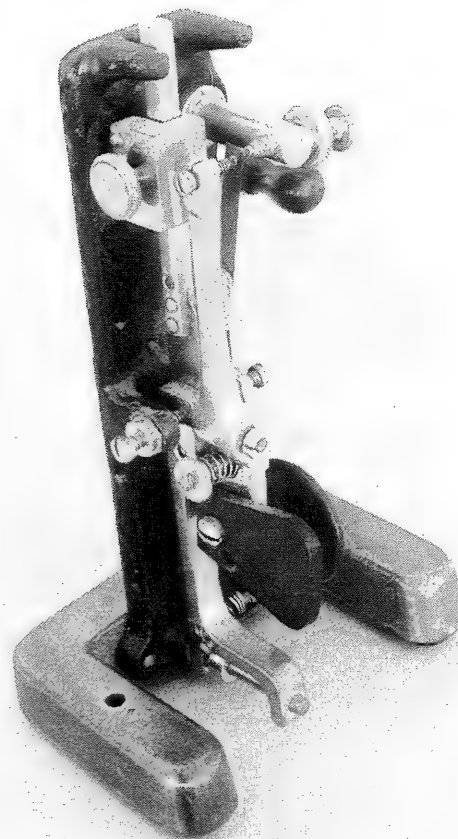
Herewith is shown a new vertical telegraph speed key. The vertical key combines in one stroke extreme simplicity, efficiency, light weight, (one and one-half pounds) and it produces a very superior quality of full, solid clean-cut dots. In addition may be mentioned the fact that with this new instrument it is next to impossible to run dots and dashes together.



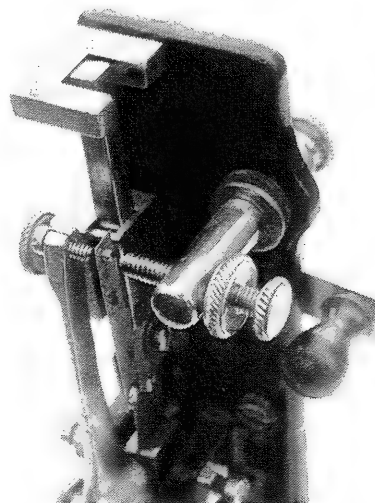
Something New in Speed Keys for Radio and Telegraph Operators. It Sets in a Vertical Position, Being Held Upright by a Substantial Base.

It represents an improved type of single contact instrument and it is so extremely simple that it reduces repairs, adjustments and replacements to a minimum. The key has a remarkably easy touch. Moreover it is unnecessary to change any adjustments about the machine except to slide the speed weight up or down when it is desired to send faster or slower or to adjust the tension springs so that the "touch" of the key lever feels best. And you can, of course, regulate the lightness or heaviness of dots by turning the contact screw in or out -- just a little at a time -- until the dots appear to be solid and clear. Otherwise, there are no adjustments to be made.

From *The Electrical Experimenter*,
November 1917, page 458.



First style Upright.



Second style damper.

Upright

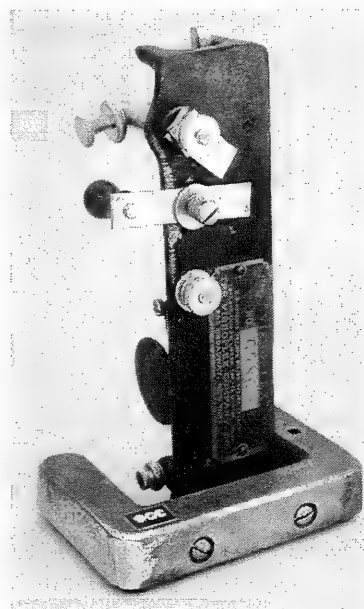
Produced: 1917 - 1919
Patents: 1,260,008 filed August 4, 1917, issued March 19, 1918
Plate types: C1 - C2
Base colors: Nickel-plated U-shaped base with black vertical mounting plate.
Variants: Damper posts cast into the vertical mounting plate; separate damper screwed to cast plate; flat brass nickel-plated mounting plate.

After Benjamin Bellows died, Vibroplex acquired the rights to the Coffe patent in 1913. Coffe's vertical, you will recall, was judged the first mechanical semi-automatic key patent. The patent number, 812,183, was then included on all of the nameplates from type C1 on.

Perhaps stung by his earlier loss to Bellows in his battle against the Coffe patent, and determined to go Coffe one better in designing a vertical key, Martin now designed his own "Upright" model. This would be his second key, after the No. 4, to occupy less desk space. Martin filed a patent application in August of 1917 for the design, and the patent issued seven months later. He may have been chagrined that he had not covered a vertical embodiment of the bug in his earlier patents, so he touched all bases this time, going so far as to note that the new vertical design "is capable of successful operation in a horizontal position" if placed on its back.

Vibroplex now had its ultimate space-saving bug. Called the Upright, it used a single contact Model X-type mechanism. The key was also referred to as the Wire Chief's Key and more commonly, the "vertical Vibroplex." Its first appearance in print was in November 1917 (see opposite). The Company offered the Upright until early 1919, but to judge from the numbers in collections today, didn't sell very many.

There are three general variations of the Upright. On one, the vertical cast-iron plate to which the key mechanism is mounted has two damper posts cast into it; the impression is something like the U-damper of the No. 4 Blue Racer. This is thought to be the earliest style. The next style of the Upright has a separate damper attached to a cast-iron mounting plate with screws; otherwise, the plate is identical to the early style. And the last style used a flat, nickel-plated brass plate on which the components were mounted.



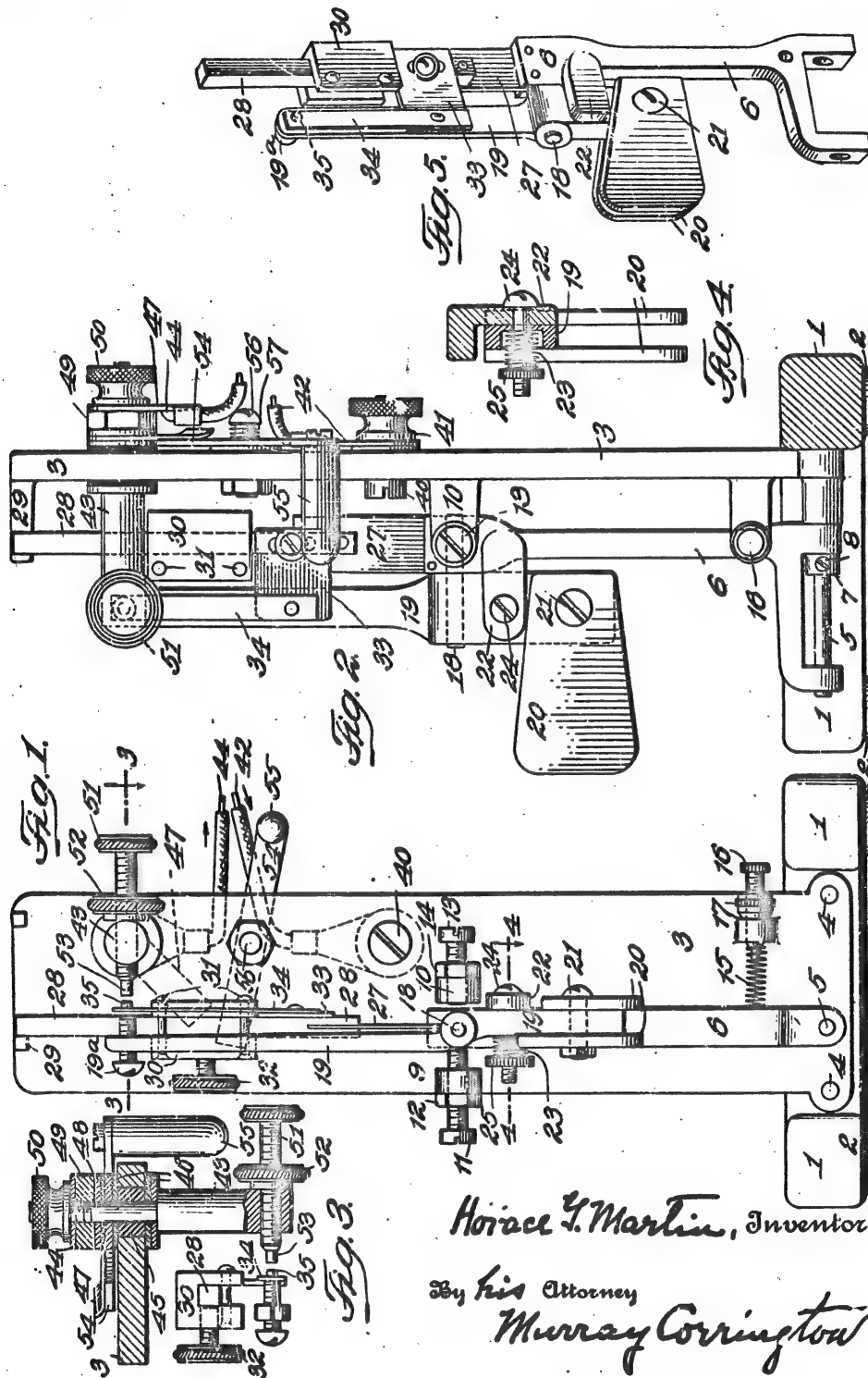
Collectibles and Oddities

The Upright is so scarce that one needn't decide between the variations to determine which is more desirable. Any Upright is a worthy addition to a collection. But if a choice has to be made, "earliest is best," and it also looks a bit more interesting.

H. G. MARTIN.
TELEGRAPHIC SENDING MACHINE.
APPLICATION FILED AUG. 4, 1917.

1,260,008.

Patented Mar. 19, 1918.



UNITED STATES PATENT OFFICE

HORACE G. MARTIN, OF RUTHERFORD, NEW JERSEY.

TELEGRAPHIC SENDING-MACHINE.

1,260,008.

Specification of Letters Patent.

Patented Mar. 19, 1918.

Application filed August 4, 1917. Serial No. 184,401.

To all whom it may concern:

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at Rutherford, in the county of Bergen, State of New Jersey, have invented a new and useful Improvement in Telegraphic Sending-Machines, of which the following is a specification.

My invention relates to improvements in telegraphic sending machines for sending messages, of the same general character and purpose as set forth in my prior Patents No. 842,154, dated January 22, 1907, and No. 1,043,449, dated November 5, 1912.

Referring to the drawings, Figure 1 is a front elevation of one embodiment of my improved telegraphic sending machine; Fig. 2 is a side elevation of the same, looking toward the left in Fig. 1; Fig. 3 is a sectional view on the line 3—3, Fig. 1, looking downward; Fig. 4 is a similar sectional view of a portion of the moving parts of the apparatus, on the line 4—4, Fig. 1, presently to be explained; Fig. 5 is an oblique or diagonal view, partly toward the left and partly downward, Fig. 1, of the moving or operative parts of the apparatus.

In the preferred construction I provide a metal base 1, having preferably four rubber feet, 2, which rest upon the table and keep the apparatus in equilibrium without the necessity of clamps or screws. An upright frame or base 3 is secured to the base 2 by screws 4, 4, Fig. 1, this construction being employed rather than that of casting the parts 1 and 3 integrally.

A shaft 5 is secured in the upright 3, on which is placed a main lever 6, capable of being moved from left to right upon the axis 5. A ring 7, held in place on shaft 5 by a locking screw 8, Fig. 2, prevents lever 6 from slipping off said shaft. Two studs 9 and 10 are cast on upright 3. A screw 11 with lock nut 12 is inserted in lug 9, and a similar screw 13 with lock nut 14 is inserted in lug 10, Fig. 1, which screws and nuts are adjustable stops to control the movement of the upper end of lever 6 from left to right. The upper end of lever 6 is normally held against stop 11 by a spring 15 near its lower end, whose tension can be varied by means of a screw 16 and thumb nut 17.

A shaft 18 is secured in lever 6 near its upper end, which serves as an axis on which to move a hand lever 19, to the lower end of which pieces

of insulating material 20 are secured by a bolt 21 for operating the apparatus, and in the upper end of which is inserted a screw 19^a. A lug 22 projects from the side of lever 6 (side view, Fig. 2, end view, Fig. 1), against which the lower end of lever 19 is normally held by a spring 23, bolt 24, and the tensioning thumb nut 25. These parts are illustrated in greater detail in Fig. 4.

In the upper end of lever 6 is secured a flat, vibrator spring 27, seen sidewise in Fig. 2 and edgewise in Fig. 1. To the other end of spring 27 is secured a vibrator bar 28, whose upper end normally rests against a lug 29, preferably integral with upright 3. On bar 28 is a weight 30 which is held on the bar by two pins 31, but is capable of being moved to and held in any desired position up or down said bar by means of the thumb screw 32, Fig. 1. To bar 28 is fastened in any convenient manner a small metal piece 33, to which is secured a flat spring 34, parts 33 and 34 being seen sidewise, Fig. 2, and edgewise, Fig. 1. Spring 34 carries at its upper end a contact point 35.

A binding post 40 (see Fig. 2) is secured without insulation to the rear side of upright 3 by means of a thumb-nut 41 for attaching an electrical conductor 42. A second binding post 43 is likewise secured to upright 3, but insulated therefrom, for securing a second electrical conductor 44. Post 43 and the manner of securing the same to and insulating it from part 3 are shown in greater detail in Fig. 3. Said post passes through a bushing 45 and washers 46, 46, of insulating material, preventing contact between said post and upright 3. A switch contact 47, Fig. 3 (dotted lines, Fig. 1), is also inserted on post 43, and the parts are held together by washer 48 and nut 49. The electrical conductor 44 is secured to said post by thumb nut 50. At the other end of post 43 is a screw 51 which may be held in any position to which it is moved by the thumb-nut 52, and it has inserted in its end a suitable contact point 53. A switch 54, having an insulated handle 55, is secured to the rear side of upright 3 by a bolt 56 and spring 57, Figs. 1 and 2. When said switch is open, Fig. 1, the apparatus is operative; but when it is closed, Figs. 2 and 3, the current flows directly between 42 and 44 through parts 40, 3, 54, 47, 43, and the apparatus is inoperative.

The operation of the apparatus in the sending

of telegraphic messages may now be readily understood. The parts being in their normal position, shown in Fig. 1, and assuming that the electrical current will flow through the conductors 42 and 44 as indicated by the arrows, when the operator desires to send a message, he moves hand pieces 20 and the lower end of lever 19 to the left, Fig. 1, compressing spring 23, and the upper end of said lever to the right, said lever revolving on axis 18. By said movement screw 19^a, which may be adjusted to the right or left as desired, striking the upper end of spring 34 moves it to the right and brings the contacts 35 and 53 together. The circuit is thus closed, and the current flows through the machine by way of conductor 42, upright 3, shaft 5, lever 6, spring 27, bar 28, part 33, spring 34, contacts 35, 53, screw 51, post 43 and conductor 44 to the line. This operation of the machine sends an impulse over the line which continues until the operator releases pressure against the hand pieces 20, whereupon spring 23 returns lever 19 to the position shown in Fig. 1, and spring 34 separates the contacts 35, 53. Further movements of hand pieces 20 to the left and then releasing pressure thereon, sends more impulses over the line. This is the operation for sending the dashes of a telegraphic message. In order to send the dots of a message, the operator moves hand pieces 20 to the right, bringing the upper end of lever 6 against the right hand stop 13, by means of lug 22, which movement also throws spring 27, bar 28 and parts 30, 31, 32, 33, 34, 35 to the right and causes them to vibrate from right to left upon spring 27, which vibrations continue while the upper end of lever 6 is held against stop 13. These vibrations cause a series of makes and breaks between contact points 35 and 53, the number depending upon the length of time which the operator holds the lever 6 against stop 13. For sending a single dot he holds the lever in that position but an instant, and for making more dots he holds it there a longer or shorter time according to the number desired. On releasing pressure against hand pieces 20, spring 15 returns lever 6 and all the parts connected therewith to their normal positions shown in Fig. 1. After each operation vibrations of bar 28 and connected parts, including contact 35, are stopped by said bar coming against lug 29. In the making of dots the current flows through the mechanism between conductors 42 and 44 in the manner pointed out above.

While I prefer that my within described apparatus stand in a vertical position, as indicated by Figs. 1 and 2, it is capable of successful operation in a horizontal position, the front side of Fig. 1, left hand side of Fig. 2, being in such event the upper side.

I claim:

1. In a telegraphic sending machine, the combination of a base, a shaft secured to the base, a main lever rotating on said shaft, a shaft secured to said main lever, a hand lever rotating on said shaft and having means for its operation located between said shafts, a vibrator mechanism attached to said main lever and adapted to vibrate after said main lever has come to rest, an electrical contact secured to and insulated from said base, an electrical contact operated by movements of said vibrator mechanism, and means whereby said main lever and said vibrator mechanism may be operated by movement of the hand lever in one direction to effect a series of makes and breaks between said contacts after said main lever has come to rest.

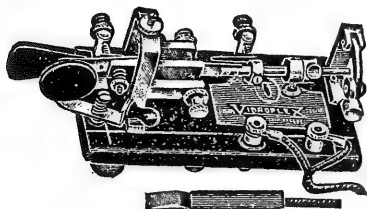
2. In a telegraphic sending machine, the combination of a base, a shaft secured thereto, a main lever rotating on said shaft, a shaft secured to said main lever, a hand lever rotating on said shaft and having means for its operation located between said shafts, an electrical contact secured to and insulated from said base, an electrical contact connected with said main lever and means whereby a series of makes and breaks between said contacts may be effected by movement of said hand lever in one direction without operating said main lever.

3. In a telegraphic sending machine, the combination of a base, a shaft secured thereto, a main lever rotating on said shaft, a shaft secured to said main lever, a hand lever rotating on said shaft and having means for its operation located between said shafts, a vibrator mechanism connected to said main lever and adapted to vibrate after said main lever has come to rest, an electrical contact secured to and insulated from said base, an electrical contact connected to said vibrator mechanism and means whereby a series of makes and breaks between said contacts may be effected through the movement of both said levers, and another series may be effected by movement of said hand lever only.

4. In a telegraphic sending machine, the combination of a base, a shaft secured thereto, a main lever rotating on said shaft, a shaft secured to said main lever, a hand lever rotating on said shaft, vibrator mechanism connected to said main lever and adapted to vibrate after said lever has come to rest, an electrical contact connected to and insulated from said base, an electrical contact vibrating with said vibrating mechanism, and means whereby said contacts may be caused to effect a series of makes and breaks to produce the dots of a message through movement of one end of said hand lever in one direction, and to effect another series to produce the dashes of a message through movement of the opposite end of said hand lever in the same direction.

HORACE G. MARTIN.

Genuine (Old Style) Single Lever



Improved Martin VIBROPLEX

Genuine (Old Style) Single Lever
IMPROVED Martin Vibroplex

Japanned Base - - - - - \$17.00
Nickel-Plated Base - - - - - 19.00

New and Improved Features

Improved Trunnion Lever—More simple, more reliable, and easier to manipulate.

Extra Heavy Contact Points Throughout—insuring a firm contact always, better and stronger signals, and longer life.

Improved Design—Combining sturdiness and grace with beautiful ornamentation, which serves to make the IMPROVED VIBROPLEX the best looking, as well as the most durable and efficient sending machine made.

To fully appreciate the improvements found in the Genuine (Old Style) Single Lever Improved Martin Vibroplex you must use the machine itself.

To get the feel of the Improved Trunnion Lever—to enjoy the ease and confidence that comes from its easy manipulation—to appreciate the great saving in labor—to know the strong, rapid Morse of which it is capable you must send with it; to enjoy the satisfaction that comes from its use, you must own a Genuine (Old Style) Single Lever Improved Martin Vibroplex. Pronounced by Railroad, Commercial, Press and Broker operators everywhere to be the **easiest-to-operate** sending machine ever made. You'll say so too once you have handled this greatly improved machine. **Order your Genuine Improved Martin Vibroplex NOW!**

Prompt Shipment. Money Order or Registered Mail.
The Genuine Bears the Martin Nameplate.

Another Victory for the Vibroplex

In the recent suit of The Vibroplex Company, Inc., vs. William A. Zeidler Company, U. S. District Court, Southern District of New York, His Honor, Judge Learned Hand, after a full hearing on the merits, held the sending machines of the defendants to be clear infringements of the patents owned by The Vibroplex Company, and ordered an injunction accordingly. The Zeidler Company was the manufacturer and nominal defendant, but the real defendants were parties in Virginia, the Abernethys, who devised the infringing apparatus and defended the suit.

The Double Lever Machine Also Infringes

After being defeated in their first contentions, the defendants introduced a modified apparatus employing one lever for making "dots" and a second lever for making "dashes," much after the manner of the Martin "Double Lever" machine. Thereupon the Court ordered a reargument, and after hearing counsel for both sides, promptly held in a decree signed February 27, 1922, that said double lever machine was also an infringement and should be enjoined.

In this suit the third of the patents issued to Horace G. Martin was for the first time involved, all prior suits against infringers having been based on other patents owned by The Vibroplex Company. This THIRD Martin patent covers the perfected, single lever, double contact machine, and in holding said patent valid and infringing the Court clearly recognized the superior merits of the apparatus over all others by declaring that it "has nearly supplanted all other forms" of sending machines.

REMINGTON TYPEWRITER No. 10 ALL CAPITAL TYPE (Shiftless) FOR TELEGRAPH WORK

Standard visible machine. The machine that has everything—right hand carriage return—the sure and certain paper feed—a touch that is the last word in ease of operation—work that is good and always good—the mill that defies the fastest senders. These machines have been reconstructed in our own factory, and are backed by our Guarantee. If you are looking for a good machine for little money, this is it, \$50. Only a limited number of machines at this low price. Act Quick!

Money order or registered mail.

The Vibroplex Co., Inc.

825 Broadway - - - New York

J. E. ALBRIGHT, Prdsident
Member O. R. T. Grand Div. Cert. 601

A GOOD MACHINE

at a

VERY LOW PRICE

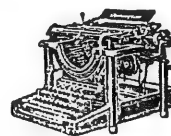
\$50

Cash

WITH BACK SPACER

TWO-COLOR RIBBON

TERMS IF DESIRED



The pivot improvement is extolled in an April 1922 ad in *The Railroad Telegrapher*. The important part that Martin's patents played in The Vibroplex Company's dominance of the market is also described in this ad.

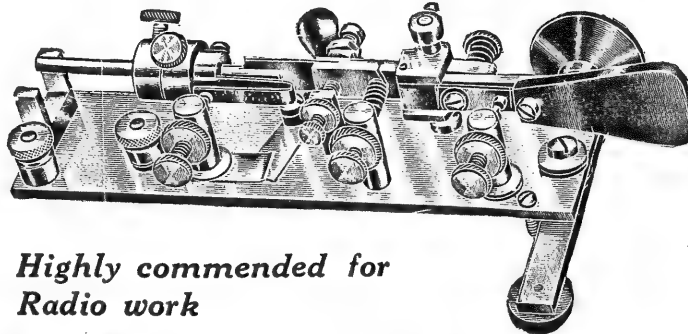
Are You at Your Best?

To be at his best is the patriotic duty of every Telegraph Operator.

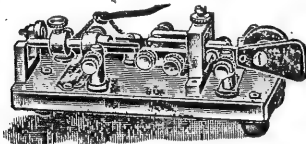
With a Vibroplex, you attain maximum efficiency with a minimum of effort.

The Vibroplex quickly develops ability not possible with the hand, and insures you being at your best.

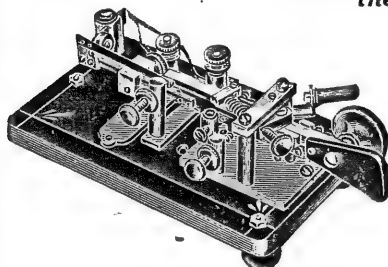
Martin "MIDGET"
Weight 15 ounces. Fits vest pocket. Nickel-plated, \$15



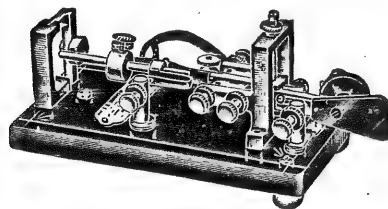
*Highly commended for
Radio work*



VIBROPLEX No. 4
Blue-Enameled Base - \$15
Nickel-plated Base - \$17
(Mounted on Old Style
Base - \$15



MODEL X
Japanned Base - \$15
Nickel-plated Base - \$17



**OLD STYLE
SINGLE LEVER**
Japanned Base - \$15
Nickel-plated Base - \$17

Martin Vibroplex

The Vibroplex transmits **STRONG, CLEAR** Morse and carries thru over the longest, heaviest circuits without visible effort on the part of the sender.

A never-ending surprise to Telegraph Operators everywhere, is the **EASE** with which a Vibroplex is operated.

There's no cramped, tiresome muscular movements in Vibroplex sending. Instead—a smooth, pendulumlike motion of the arm in pressing the lever from side to side—the machine does the work.

Why Not Get That Vibroplex To-day?

When you have learned to use a Vibroplex—and it is **EASY** to master—you have found the **QUICKEST** and **EASIEST** way to telegraph.

You do your work in half the time, and with half the labor. Actually pays for itself in labor saved.

Any Telegraph Operator can use the Vibroplex. The old and young use it with equal success. Many have mastered it the first day. What they have done you can do.

You owe it to yourself to take advantage of the **EASY ACTING** Vibroplex. **DO IT RIGHT NOW**

SEND FOR A VIBROPLEX

Immediate shipment—Money order or registered mail. Liberal allowances on old machines.

To get the best results—Get a Vibroplex for your own personal use. Adjust to suit your hand. Don't tinker. Don't let others use or change the adjustment.

CATALOG ON REQUEST

THE VIBROPLEX CO., Inc.

253 Broadway, NEW YORK

J. E. ALBRIGHT, General Mgr., Member N. Y. O. R. T., N. Y. Div. 26. Cert. 68

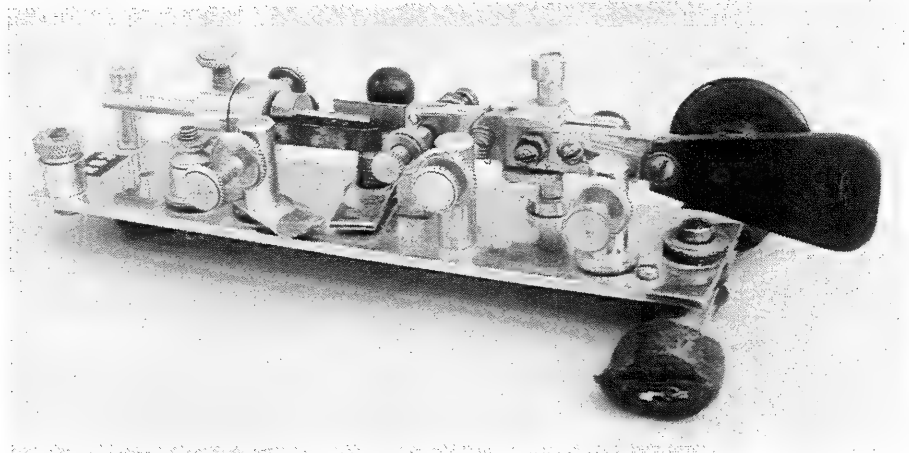
November 1918 ad in *The Railroad Telegrapher*. In addition to the Midget, note the first style Model X, and reference to the No. 4 (Blue Racer) old style (i.e. large) base option.

Midget

Produced: 1918 - 1920
Patents: none
Plate types: C2 - C3
Base colors: Nickel
Variants: U-damper and No. 4 base option are possible.

The Midget is unquestionably the rarest Vibroplex model. It is a small, insignificant-looking key. To a non-collector (and perhaps to many collectors), an Upright, Double Lever or early Model X might look more interesting and impressive on the display shelf. But due to its extreme scarcity, the Midget is the one most desired by almost all Vibroplex collectors.

The Midget was advertised regularly in *The Railroad Telegrapher* from its appearance in the October 1918 issue to its denouement in 1920. It appeared just after the Upright, and is Martin's third and final space-saving design. The key is entirely nickel plated. The



The mechanism of the Midget is of the split-lever design, but the pivot is a simple vertical shaft or stud on which the main lever pivots; trunnion bearings are not used. The damper shown in the ads is a copy of the No. 4 U-style, but the damper actually used in production (at least on the examples I've seen) is a simple vertical post.

The front feet of the Midget are mounted on a pivoting arm, the better to fold it up and put it in your pocket after a hard day at the operating desk. This key is so small that the only place space could be found for the nameplate was underneath the base.

Collectibles and Oddities

For the information of the collector who searches for everything, no variations of the Midget are known to exist. But that does not mean none were made. Midgets with the U-style damper as shown in its ads may be waiting to be found.

The real prize, if one was ever sold, was an option offered in the Company ad in the October 1919 issue of *The Railroad Telegrapher*: The Midget mounted on the No. 4 (Blue Racer) base. We can only imagine what that key would look like.

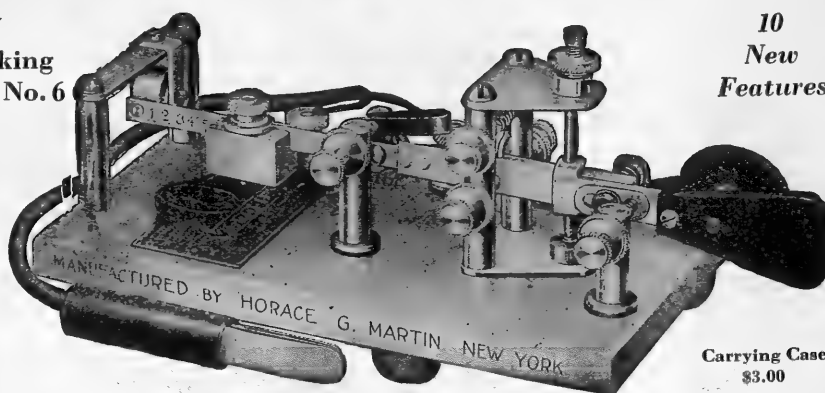
VIBROPLEX

Reg. Trade Marks: Vibroplex Bug; Lightning Bug

**The NEW
Easy Working
Vibroplex No. 6**

**10
New
Features**

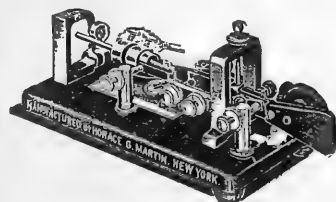
**In
Attractive
Colors:
Blue
Green
Red and
Black \$17
Nickel-
Plated, \$19**



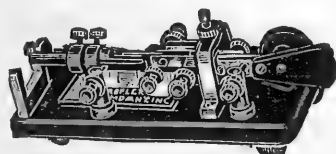
**Carrying Case
\$3.00**

Amateur or Experienced Operator

The easiest way to send



Improved Single-Lever Vibroplex — Used by tens of thousands of operators because of its ease and perfection of sending. Equipped with Simplified Trunnion Lever. Large Base, Japanned Base, \$17; Nickel-Plated Base, \$19.



Famous Blue Racer (No. 4 Vibroplex) — Has all the advantages of the large model, but only half the size. In high favor with wireless operators. Japanned Base, \$17; Nickel-Plated Base, \$19.

Special Radio Message

Furnished with Extra Heavy, Specially Constructed Contact Points 3/16 inch in diameter to break high current without use of relay. \$25.

To be a good sender — able to make clear, uniform signals that are easily read by the receiving operator, is the ambition of every true "ham," and nothing else has contributed more to the making of good senders than the **VIBROPLEX**.

Any one that can send on the Standard telegraph key, can send *easier, better and faster* with a **VIBROPLEX**. **You simply press the lever — the VIBROPLEX does the rest.**

Experienced operators on land and sea — over 100,000 of them, use and endorse the **VIBROPLEX** as Standard for clarity, precision and easy manipulation.

Whether amateur or experienced operator — **The New Easy-Working VIBROPLEX** will give you a good "fist," speed up traffic and lessen fatigue.

Try this *New bug* and see how slick it works in your own hands — so smooth and easy in action, so easy to send strong, clear signals at any speed. Built of the finest materials and with **10 New Exclusive Features** — the *New VIBROPLEX*'s superiority is instantly apparent. Sent anywhere on receipt of price. Money order or registered mail. Liberal allowance on old **VIBROPLEX**.

THE VIBROPLEX CO., Inc.

825 BROADWAY

NEW YORK

Telephone:
Algonquin 4828

J. E. Albright,
President

1929 ad features the No. 6 (later to be called the Lightning Bug). The wording on the edge of the base is an artist's addition. Oddly, a transverse style D plate has been found on other models, but not (as shown here) on a No. 6.

No. 6, Lightning Bug

Produced: 1927 - 1979

Patents: none

Plate types: D3 - D8

Base colors: Black japan, nickel, red, green, blue, black crackle, chrome, battleship gray, gray crackle, beige (and possibly brown).

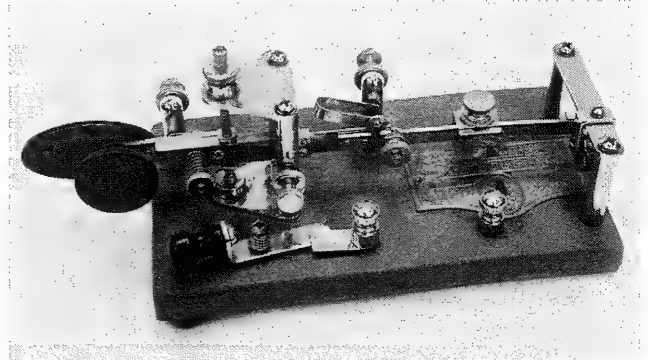
Variants: Pinned dash lever in 1939.

The No. 6, or Lightning Bug, was the seventh model to be offered by Vibroplex, which makes one wonder which model after No. 4 (the Blue Racer) wasn't counted: The Upright or the Midget. This new key would become one of the longest-lived models in the Company line. Its design, with a frame assembled from triangular plates and a bridge-style (M type) damper, was a major departure from prior models. The Lightning Bug also had a flat pendulum; the combination of the assembled frame and flat pendulum would be repeated almost fifteen years later on the Champion and Zephyr.

The Lightning Bug was first offered with the usual black japanned base or the optional nickel plated base. It then ran through the same finishes as the Original: the red, green and blue color options, black crackle, Deluxe chrome and battleship gray, chrome, and in the mid- to late 1950's, gray crackle, and beige in the late 1970's. Brown may have been briefly used in 1979.

Because the No. 6 appeared after the 1921 "Improved" Vibroplex, they all were made with the bent-lug lever pivot. Or so one would think. In 1939 a pinned-lever variation was made. But as with the 1939 pinned-lever Original discussed earlier, this was a short-lived experiment.

Today, there are no bugs made by the Company having the assembled frame. The Lightning Bug officially lasted until about 1979, shortly after the Company was sold by the Albrights and moved from New York to Maine. Only a few Lightning Bugs carried the Maine (D8) plate, but as late as 1988, the Company still had a handful of this model available for sale.

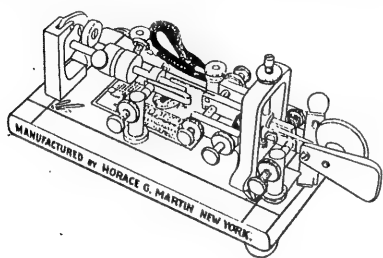


Gray-based Lightning Bug, c. 1960.

Collectibles and Oddities

The Lightning Bug is one of the more common keys made by Vibroplex, but fine examples will become more difficult to acquire as more collectors enter the hobby. While the pre-1939 Fulton Street (D3 plate) Lightning Bugs with an optional red, blue or green colored base are the scarcest, even the black japan and nickel plate versions are becoming hard to find.

The New Improved Original Martin Vibroplex



Suitable for all classes of transmitting work where speed and perfect Morse are prime essentials

Old Style, Single Lever. Two pairs of contact points: one for dots, the other for dashes. Weight, 3 lbs 8 oz. Japanned base, or nickel-plated base. A handsome and efficient transmitting machine, with unlimited sending possibilities. Also furnished on smaller base — weight 2¾ lbs.

The Vibroplex Holds All Speed Records

First prize was awarded to Mr. C. V. Barfield by the Panama-Pacific International Telegraphers' Tournament Association, San Francisco, using the Original Martin Vibroplex. He sent 59½ telegrams, spelled out, in thirty minutes. His Morse was absolutely perfect.

[5]

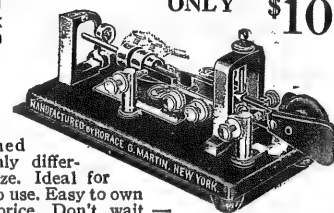
Mid-1920's catalog offers a
"Martin Junior" in the fine print.

Here It Is! MARTIN JUNIOR

Think of it!
A Genuine
MARTIN
Vibroplex
for only \$10

For Limited Time
ONLY \$10

All standard features. Heavy contact points. 2¾ pound black japanned base. The only difference is in size. Ideal for radio. Easy to use. Easy to own at this low price. Don't wait — order **YOURS NOW!** Remit by money order or registered mail.



OTHER VIBROPLEX MODELS

Famous Improved Vibroplex, Black or Colored, \$17; Nickel-Plated, \$19. Easy-Working Vibroplex No. 6, Black or Colored, \$17; Nickel-Plated, \$19. Write for catalog.

THE VIBROPLEX CO., INC.
825 Broadway New York, N. Y.

*The "Junior" appears in QST
for the first time in
December, 1934.*

Martin Junior

Produced: 1921 - 1939 (as a separate model: 1934 - 1939)

Patents: none

Plate types: D1 - D3

Base colors: Black japan.

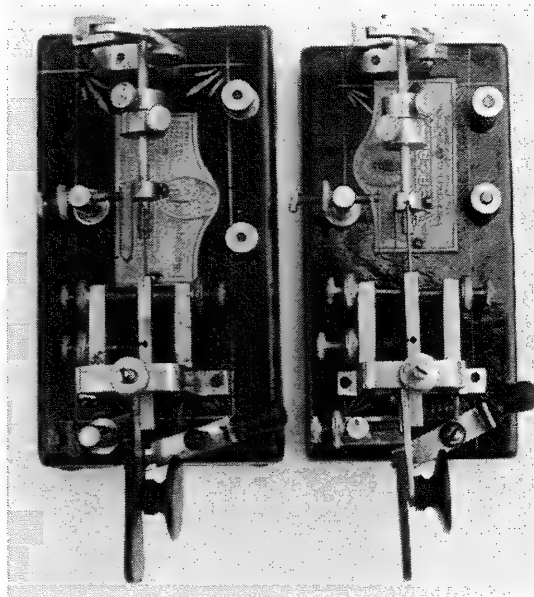
Variants: Optional nickel plated base on "early models."

The first ads for the Martin Junior appeared in 1934, which is curious, since The Vibroplex Company had been making the model for over a decade. The very first keys to carry the 825 Broadway (type D1) nameplates, introduced in 1921, were "old style" (i.e. Original) Vibroplex models built on a "smaller base." Whereas the standard large base was 3.5 inches wide, the smaller optional base measured only three inches wide.

Admittedly, these early models were not called a "Martin Junior" or even a "Junior." Catalogs from the 1920's describe the "New Improved Original Martin Vibroplex," and state that it was "Also furnished on smaller base - weight 2 3/4 lbs." This, it is noted, is the same weight advertised for the Martin Junior in 1934. Because of their size, collectors have always referred to these small (3" wide) base Originals as Martin Juniors. This smaller-based model was available with a black japan or nickel plated base (but never with an optional colored base). Judging by the catalogs, this optional size seems to have been discontinued around 1930.

When it appeared again in 1934, the small-based Original was a separate model: the Martin Junior. (Later it would be referred to as a "Junior model Vibroplex".) This time, the Junior was available with the black japanned base only.

This key, whether described as a small-based Original or a Martin Junior, was the first of two standard-style (i.e. split-lever) bugs to be built on a 3-inch wide base. It disappeared abruptly in 1939, and was followed immediately upon its demise by the 3-inch wide Zephyr.



Original (L) and Junior (R).

Collectibles and Oddities

A scarce "Martin Junior" would be one with a nickel-plated base; this would have been made some time early in its production cycle when this optional finish on the "smaller-based Original" was still offered. Such a key would most likely have a D1 or D2 nameplate.

The Military Bug (J-36)

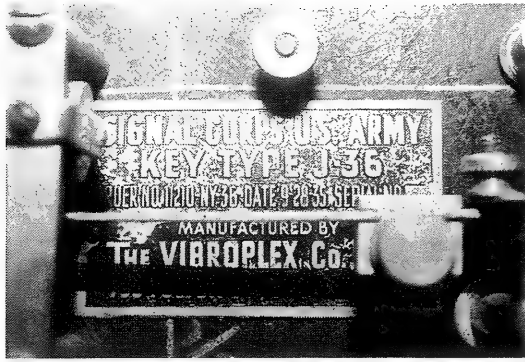
Produced: 1935 - 1943
Patents: none
Plate types: early (large print), late (small print)
Base colors: Black crackle.
Variants: none.

The Vibroplex Company provided thousands of semi-automatic keys to the Signal Corps from as early as 1935 to as recently as 1991. Through WWII these were standard-finish (black japan, then black crackle) Lightning Bugs with a special metal nameplate in place of the bug plate identifying them as a Signal Corps J-36. The production dates given in the summary above are based on keys with a Signal Corps J-36 plate that I know to be in collections; it is likely that Vibroplex J-36's with both earlier and later nameplate dates were made.



Vibroplex J-36s. Late model on left, early model on right.

Vibroplex J-36 nameplates came in several variations: A pre-WWII "small print" Fulton Street plate, a pre-WWII "large print" Fulton Street plate, and two WWII "small print" plates (both Fulton Street and 833 Broadway). Each plate bears a contract number and date.



Early large-print plate (L) and late small-print plate (R).

Following WWII, the military continued to order semi-automatic keys from time to time. Perhaps to reduce costs, regular production models bearing the usual commercial nameplates were shipped. Here are a few examples that have turned up, based on information gleaned from keys found by collectors:

- In the early 1950's, an order for the U.S. Navy was filled using the black-crackle based Champion. These carried the usual Navy anchor logo and the identifier "STK #N17-K-45926-1001" stamped on the bottom of the base in orange. (As a Navy bug, this would not be a J-36.)

- In the mid-1960's, a military order was filled with gray-based Champions. These had typical military part and stock numbers (including "1N 5805-312-2750") stamped on the bottom in red ink.

- In the early 1980's, a contract for a communications training school at Keesler AFB in Biloxi, Miss., was filled by shipping Deluxe Lightning Bugs from the Maine shop. These had no military identifiers at all, but upon reaching their destination, the serial number (4000 series) followed by the phrase "govt prop" was scratched into the bottom of the base.

- And in 1991, the Company filled a military order with standard-finish Original models. The markings on the box included the number "5805-00-160-1236."

With the advent of computers and global satellite positioning systems, the various government agencies and military branches are phasing out the use of manual Morse as a communications tool. We have probably seen the last of the military acquisitions of semi-automatic keys by the U.S. services. But to sharp-eyed collectors, military Vibroplex keys will continue to appear at hamfests and flea markets.

Collectibles and Oddities

The early J-36 bugs with the large-print plates are the scarce ones. Also scarce, and usually overlooked, are the post-WWII commercial bugs ordered by the Signal Corps and stamped on the bottom with military stock and contract numbers. If there's one lesson to be drawn from the keys described above, it's this: Even if you don't need that key on the flea market table, turn it over and check the bottom for markings. It may be a "military" key.

Enjoy the Joy of Sending with



VIBROPLEX No. 4

Blue Enameled
Nickel-Plated

Base.....\$12
Base.....\$14

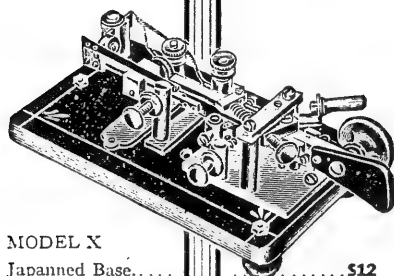
Easy to Learn Easy to Operate

Nothing could be easier to learn—easier to operate than a Vibroplex.

You simply press the lever first to one side, then the other—**the machine does the rest.**

The side motion of the arm comes easy and natural. There's no muscular effort. No strain on the nerves. Speed is quickly acquired. Sending becomes a pleasure.

Don't let your arm keep you back—get a Vibroplex. It pays. **Ask the man who uses one.**



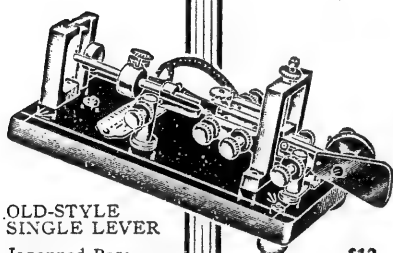
MODEL X

Japanned Base.....
Nickel-Plated Base.....

.....\$12
.....\$14

Can You Afford to Get Behind?

The need for good-sending operators is everywhere apparent. The Vibroplex will make you a good, fast sender, regardless of your age, or the condition of your arm. Operators in every branch of the service have given up nerve-racking hand-sending in favor of the Vibroplex. Eventually every operator will use one—can you afford to get behind?

OLD-STYLE
SINGLE LEVER

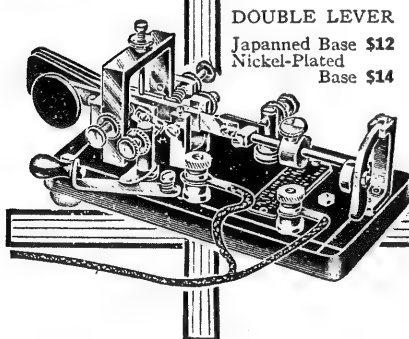
Japanned Base.....
Nickel-Plated Base.....

.....\$12
.....\$14

You Need A Vibroplex

Whether your work calls for much or little sending—you need a Vibroplex. It transmits Better, Faster Morse, with less than half the labor required in hand-sending. It insures you against loss of grip. Makes you a better, all-around man. Puts you in a position to command top salary.

Begin today to enjoy the joy of sending with a Vibroplex.
Money order or registered mail.



DOUBLE LEVER

Japanned Base \$12
Nickel-Plated
Base \$14

THE VIBROPLEX CO., Inc.

253 Broadway

NEW YORK, N. Y.

J. E. Albright, Gen'l Mgr., Member O. R. T., N. Y. Div'n 26, Cert. 68

June 1916 ad shows four collectible keys: Blue-based No. 4, early style Model X, Original with "flat-top" damper, and second-style Double Lever. By the time this ad appeared, the frame of the Double Lever had become rounded, and the Original's flat-topped damper had disappeared.

Zephyr

Produced: 1939 - 1958
Patents: none
Plate types: D3 - D6
Base colors: Black japan, black crackle, gray crackle.
Variants: none

1939 was an interesting year for the Vibroplex models. The Junior disappeared, the first Zephyrs appeared, and probably only a couple of months later, the Champion model appeared. And in the same year, John La Hiff filed his patent for the improvements which would appear on the De Luxe and Presentation models.

The new model almost seems to have been intended to take the place of the Martin Junior; they are the only keys produced on the three-inch wide base. But apart from the timing and the base size, the Zephyr was patterned after the Lightning Bug, with its assembled frame and flat pendulum.

The Zephyr introduced a new damper design. The simple I-type damper consists of a wheel supported by a sheet-metal bracket. The Zephyr also has a circuit closer.

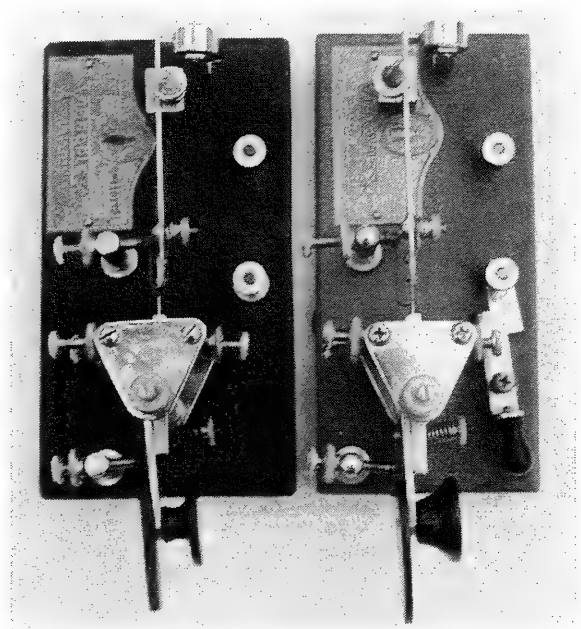
Only one standard model was available; a Deluxe Zephyr was never offered. Almost all Zephyrs will be found with a black crackle or gray crackle base finish. The Zephyr ended its days in the late 1950's.

Collectibles and Oddities

The earliest Zephyrs, with a black japan finish, would attract the attention of many collectors. Since black crackle was introduced shortly after the Zephyr appeared, few have the earlier finish.

The Zephyr is scarce because it was no bargain when new. It cost more than the Champion (\$12.50 vs. \$9.95 in 1947), and while you got a circuit closer on the Zephyr, the Champion was a larger, heavier key of otherwise identical construction. And for a few dollars more (\$15.95) you could get a Standard Original.

The availability of the Zephyr to today's collectors was not helped by a 1978 article in *73 Magazine*. This described the modification of a Zephyr to "an expensive-looking electronic keyer mechanism." All you needed was a hacksaw.



Champion (L) and Zephyr (R).

SUPERIOR KEYS FOR SUPERIOR WORK

STANDARD OF THE WORLD FOR CLARITY . . . SPEED . . . SENDING EASE

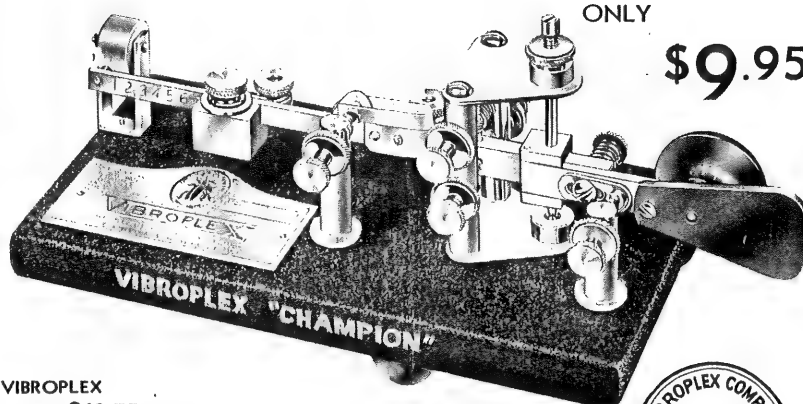
Demand
the Genuine

VIBROPLEX

SEMI-AUTOMATIC
KEY

The "CHAMPION"

The new "CHAMPION" is an inexpensive key having exceptional sending qualities—clarity . . . speed . . . sending ease, which will appeal alike to amateurs and professional operators. Chrome and cadmium plated and mounted on black base. Standard size and equipped with Standard contact points same as the more expensive models. Practically rust-proof. This model is not equipped with circuit closer or cord and wedge. If your dealer cannot supply you write us for full particulars.

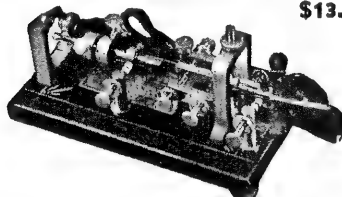


ONLY

\$9.95

IMPROVED ORIGINAL VIBROPLEX

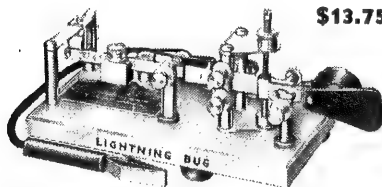
\$13.75



Needs no introduction being known the world over for its smooth, easy, rhythmic sending. In high favor with experienced operators everywhere. Polished finish bright parts.

A Winner "LIGHTNING BUG"

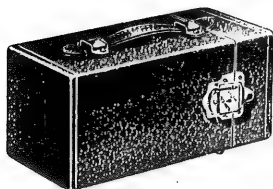
\$13.75



This is the same Great New Easy-action Vibroplex which formerly sold for \$17.00 — the same fine instrument that is preferred for its ease of handling, fine quality signal and all 'round superior performance. Polished finish bright parts.

CARRYING CASE

\$3.00



Handsome black morocco. Reinforced corners. Flexible leather handle. Keeps bug free of dust, dirt and moisture. Patent lock and key.

Approved by Over
100,000 Operators

Experienced operators — over 100,000 of them, have put their stamp of approval on VIBROPLEX keys for clarity, speed and sending ease. They have learned from actual experience that the Vibroplex really does make sending a lot easier and better, and that it develops a higher degree of sending skill than the average hand sender can hope to attain.



The BUG trade mark identifies the Genuine Vibroplex

Press Lever — Vibroplex Does the Rest

If you can send on the regulation key — you can send better, faster and with half the effort with a Vibroplex. Its simplicity, mechanical perfection, machine speed and sending ease enables any operator with a little practice, to send with the skill of an expert. Simply press lever — Vibroplex does the rest. Heed the advice of experienced operators and demand the Genuine Vibroplex. Accept no substitute. Only the Genuine has "THE BUG" trade mark. Look for it on the bug you buy. You will always be glad you did. Money order or registered mail. Write for FREE illustrated catalog.

THE VIBROPLEX CO., Inc.
832 Broadway New York, N. Y.

J. E. Albright, President

Ad from the 1940 ARRL *Handbook*. Legend on the side of the Champion base was added by the artist. Note the pinned lever in the illustration. This anachronism exists, but is scarce.

Champion

Produced: 1939 - 1979
Patents: none
Plate types: D3 - D8
Base colors: Black crackle, gray crackle, beige, sienna brown.
Variants: Pinned dash lever in 1939.

The Champion appeared in 1939 immediately following the Zephyr. It looks like a low priced spin-off of the No. 6 Lightning Bug. With the assembled frame and large 3.5-inch wide base, it was the second Vibroplex bug to have the simple I style damper (the Zephyr was first).

In keeping with its low end position, the Champion was available only with a black (later gray) crackle base. While some of the other bugs got the De Luxe treatment in the 1940's, the Champion was not among them. A circuit closer was not offered on this model. For this reason, it was advertised as being "for radio use only." (Landline telegraphers required a circuit closer to "close their key," or complete the circuit, for receiving.)

The Champion lasted until the Company moved to Maine, where a few were produced. Those with the Maine (D8) plate have serial numbers in the early 4000 range. "Old stock" Champions continued to be available for several years after that. About a dozen Champions were seen at the factory as late as 1988, but where they were made is not known. One collector bought a Champion in 1985 from the Maine shop which had the earlier 833 Broadway plate.

The Champions assembled at and sold from Maine, whether with late D7 or early D8 nameplates, have been found with gray and the late beige base finishes. (Brown, a brief Maine experiment, is also possible.) The beige finish was discontinued along with the Champion.

Collectibles and Oddities

A Champion with the Maine plate, marking the end of an era, would be a good shelf item. It would be especially noteworthy in the scarce beige or rare brown crackle finish. The only mechanical variant is the pinned dash lever curiosity that appeared in 1939. This anachronistic feature also briefly appeared on the Original and the Lightning Bug that year.

Here It Is! The "CHAMPION"
Genuine **VIBROPLEX**



only **\$9.95**

Like all true champions, the new Vibroplex "CHAMPION" defies competition. As efficient in performance as it is handsome in design, the "CHAMPION" is our answer to the demand for a BUG of established quality, proved sending ability and assured ease of operation. And in addition to these outstanding sending features, this new BUG is priced so low no one need be without it. Designed primarily for the amateur, professional operators will find it amply qualified to give an expert account of itself anywhere.

An exceptional key having exceptional sending qualities. Chrome plated. Black crackle standard size base. Standard size contact points same as more expensive models. Furnished without circuit closer, cord and wedge.

See your dealer today. If he cannot supply you, write or order direct from

THE VIBROPLEX CO., Inc.
 832 Broadway New York, N. Y.



The BUG trademark identifies the Genuine Vibroplex

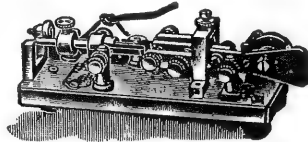
1939 ad announces the Champion.

CHOOSE THE WORLD'S MOST POPULAR RADIO TELEGRAPH KEYS

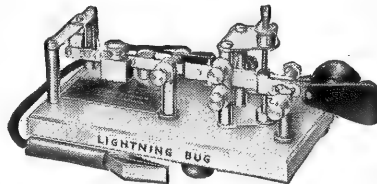
The Easiest Way of Sending
EVER DEvised

DELUXE
VIBROPLEX
KEYS
YEARS AHEAD
WITH
PATENTED JEWEL
MOVEMENT

Here's the greatest improvement in code sending apparatus in years. It's the **PATENTED JEWEL MOVEMENT** feature exclusive with DeLuxe Vibroplex keys, that has so completely eliminated tiresome sending effort that it has made sending easier than you ever dreamed sending could be. Polished chromium machine parts and base. Colorful red switch knob, finger and thumb piece. DIE CUT contacts and main spring. 3/16th contacts. Circuit closer, cord and wedge. **\$19.50**. Standard finish—Polished chromium machine parts and black base, **\$15.95**.

"BLUE RACER" VIBROPLEX

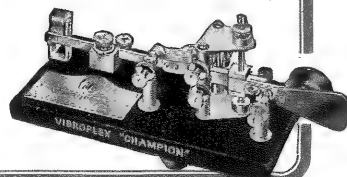
Patterned after the "Original" Vibroplex but smaller in size. Capable of the same high-class sending performance for which that key is internationally famous. Standard finish—Polished chromium machine parts and black base, **\$15.95**. Deluxe finish—Polished chromium machine parts and base with jeweled movement, **\$19.50**.

"LIGHTNING BUG" VIBROPLEX

Another popular Vibroplex key that is widely used on land, sea and in the air. Incorporates many advanced and exclusive features, adding greatly to its sending efficiency and ease of operation. Standard finish—Polished chromium machine parts and black base, **\$13.95**. Deluxe finish—Polished chromium machine parts and base with jeweled movement, **\$17.50**.

THE "CHAMPION" VIBROPLEX

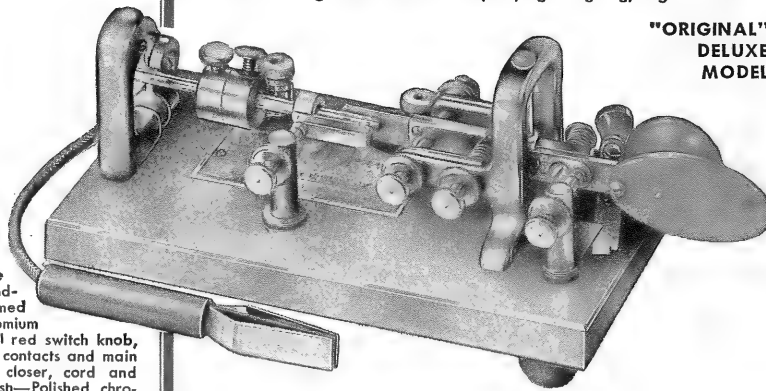
A smart, efficient, full-size key for radio use only. Chrome finished machine parts and black crystal base. **\$9.95**



GENUINE EASY-WORKING

VIBROPLEX

Reg. Trade Marks: Vibroplex, Lightning Bug, Bug

**"ORIGINAL"
DELUXE
MODEL**

VIBROPLEX popularity is more than a matter of smart, graceful design, unmatched signal quality and operating dependability. It's the better and safer way of sending . . . it's the easiest way of sending ever devised. No special skill is required. No tiresome effort is involved. No danger of 'glass' arm. **SIMPLY PRESS LEVER — VIBROPLEX DOES THE REST.**

VIBROPLEX CARRYING CASE

Plush lined, finished in handsome simulated black morocco. Reinforced corners. Flexible leather handle. Lock and key. Protects key from dust, dirt and moisture. Insures safe keeping when not in use. Prolongs life of key. **\$5.50**.



No matter which Vibroplex key you choose you can be assured that it will meet whatever demands are made upon it, and in addition give you a lifetime of sending pleasure and satisfaction. Specify model. Remit by money order or registered mail. Write for **FREE** illustrated catalog.

The "BUG"
Trade Mark
identifies the
Genuine Vibro-
plex key.



It's your guar-
anty of com-
plete satisfac-
tion. Accept no
substitute.

THE VIBROPLEX CO., Inc.**833 Broadway • New York 3, N. Y.**

J. E. Albright, President

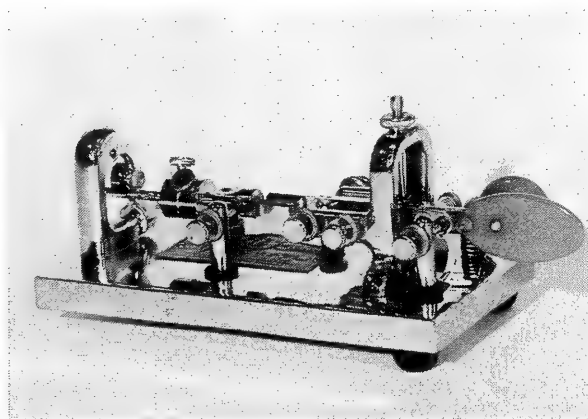
1947 ad shows four of the five damper styles,
both frame types, and two of three base sizes.
Three of the four models shown are no longer made.

The Deluxe Models

Produced: 1939 - present
Patents: 2,187,351 filed January 9, 1939, issued January 16, 1940
Plate types: D4 - D9
Base colors: Chrome, battleship gray (WWII).
Variants: Offered on Original, Lightning Bug and Blue Racer. Pinned dash lever. Upper pivot screw and jam nut.

In 1939, John A. La Hiff, a Company employee, filed a patent application which contained three improvements for the semiautomatic key. These were jewel bearings for the pivot, an adjustable mainspring, and a modified damper. La Hiff's patent, issued in 1940, was assigned to The Vibroplex Company. It couldn't have come at a better time. Martin's last patent for the standard bug, his 1923 dash lever yoke modification, the basis for the "Improved Vibroplex," would expire in 1940.

Of the three La Hiff improvements, the adjustable mainspring would be reserved for a future model, the "Super De Luxe" Presentation (see next chapter). The new damper design (see cross-section drawing Fig. 7 of the patent) was never used on a Vibroplex key. But the jewel bearing improvement was put to work immediately, incorporated into the Original, Blue Racer and Lightning Bug keys well before the patent issued. The "De Luxe" model (now spelled "Deluxe") with its "patented jewel movement" was first offered in an ad in the March, 1940, issue of *QST* magazine. However, the first Deluxe keys were made in 1939. While the option was provided on the Original, Lightning Bug and Blue Racer, it was never available on the low-priced Zephyr or Champion.



Early Deluxe Original.

The "jewel bearings" are shown as parts 62 and 63 in Figure 6 of the patent drawings. These allow the pivot (or spindle, as La Hiff calls it) to "turn upon its bearings even if the manual force applied to the handle ... is extremely small." This, says La Hiff, will avoid "any strain upon or cramping of the fingers." The "jewels" look like glass beads inserted into the ends of the pivot screws. The early Deluxe models had the typical slotted upper pivot screw and jam nut, but this was soon replaced by a blind upper pivot screw capped with a red plastic button which gave the appearance of a visible "jewel" atop the frame.

The Deluxe model marked a turning point in the bugs offered by Vibroplex. For over thirty years, the typical offerings were a black japan base or an optional nickel plated base. Otherwise, the bugs were the same. Now, two models of each key could be offered: A Standard,

with plain pivot bearings, and a Deluxe, with jewel bearings. The difference was no longer merely cosmetic.

But appearance wasn't overlooked. The Standard model would now have a black crackle painted base, and the new Deluxe model would have a chrome plated base. To complement the new finishes on the 1939 models, the keys were fitted with newly-designed plastic finger pieces. The oval-shaped paddle (thumb piece) was particularly modern in appearance. The finger and thumb pieces would be red on the Deluxe, and black on the Standard model.

Reservation of chrome for the war effort during World War II resulted in the Deluxe models being offered with a new "battleship gray" base. After the war, Vibroplex was able to switch back to the chrome plated base.

Choose AMERICA'S FINEST KEY

Genuine Semi-Automatic VIBROPLEX

Reg. Trade Marks: Vibroplex, Lightning Bug, P. M.



**Deluxe
MODEL**

**PATENTED
JEWEL
MOVEMENT**

\$19.50



The "BUG" Trade Mark identifies the Genuine Vibroplex. Accept no substitute.

The aristocrat of all Vibroplexes. Amazing **PATENTED JEWEL MOVEMENT**. Watch-like precision. Feather-touch action free of tiring effort. Simply press lever — Vibroplex does the rest. Adjustable to touch and speed. New, non-glare Battleship Gray base. Bright machined parts. Colorful red switch knob, finger and thumb piece. **DIE CUT** contacts and main spring. 3/16" contacts. Cord and wedge. Order yours to-day! Money order or registered mail. Illustrated catalog **FREE**.

THE VIBROPLEX CO., Inc.
833 BROADWAY • NEW YORK 3, N. Y.

WWII Deluxe had gray painted base.

Collectibles and Oddities

The WWII keys with a "battleship gray" painted finish will be recognized as Deluxe models by their red finger and thumb pieces; an inspection of the pivots will reveal the "jewel" inserted into the pivot screw. These bugs tell the story of wartime demands and constraints.

The Deluxe models were introduced many years after the "Improved Vibroplex" design of 1923, which replaced the pinned pivot of the dash lever with tabs or lugs bent into the lever itself. So it's strange that a Deluxe Lightning Bug appeared with a pinned dash lever. (This rare anachronism has also been found on a 1939 Original and a Champion.)

Jan. 16, 1940.

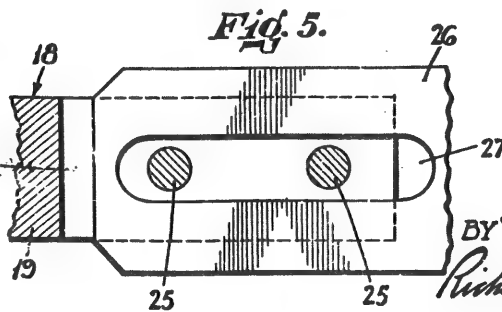
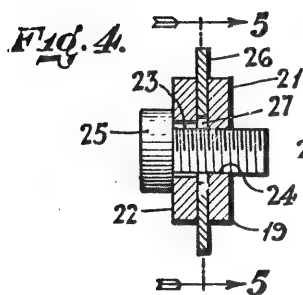
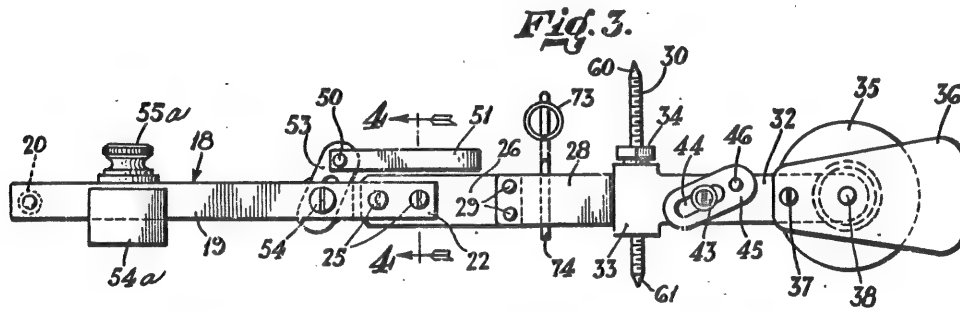
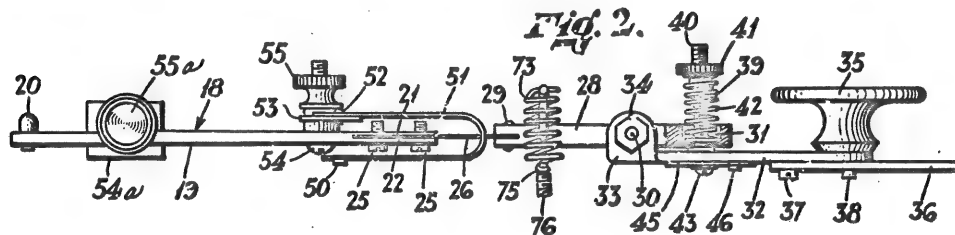
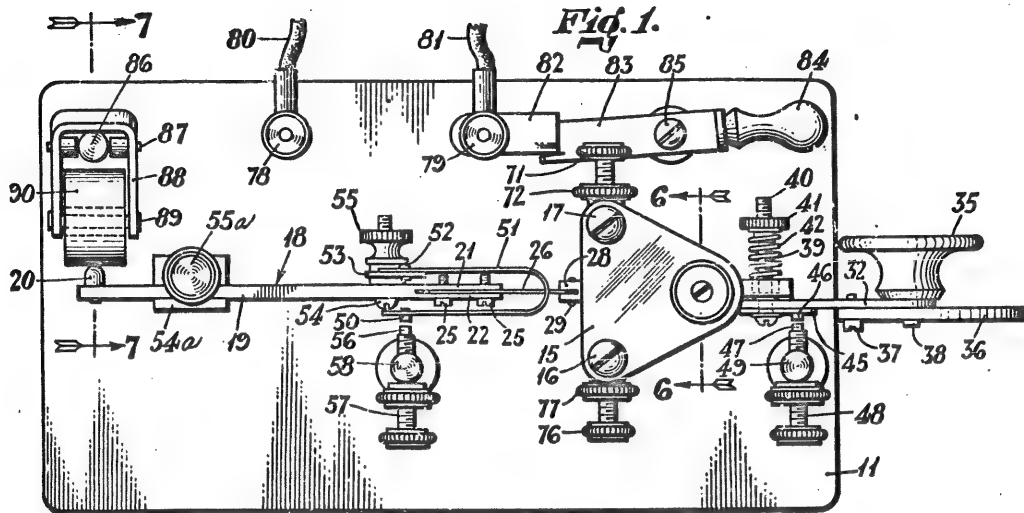
J. A. LA HIFF

2,187,351

TELEGRAPH SENDING MACHINE

Filed Jan. 9, 1939

2 Sheets-Sheet 1



INVENTOR
BY JOHN A. LA HIFF
Richard & Seier
ATTORNEYS

Jan. 16, 1940.

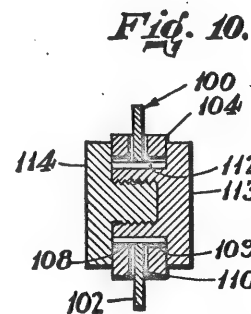
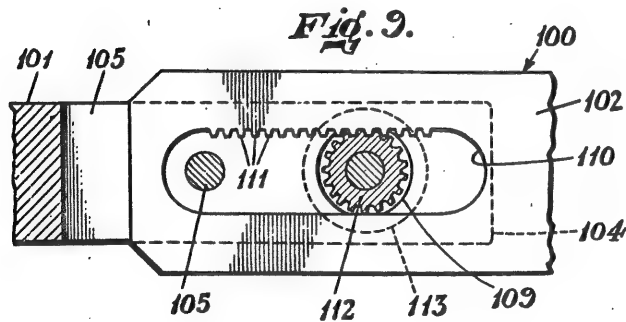
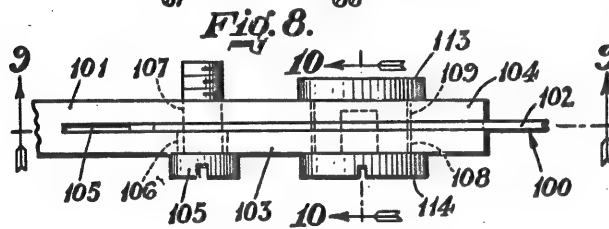
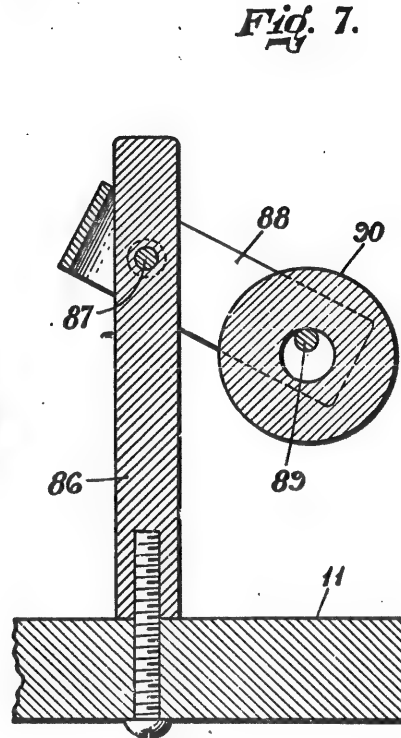
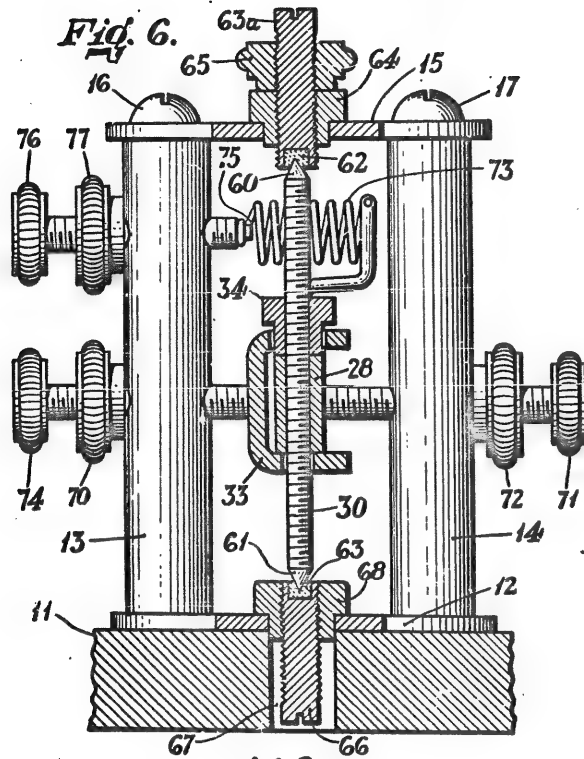
J. A. LA HIFF

2,187,351

TELEGRAPH SENDING MACHINE

Filed Jan. 9, 1939

2 Sheets-Sheet 2



BY

INVENTOR.
 JOHN A. LA HIFF
Richards & Seier
 ATTORNEYS

Patented Jan. 16, 1940

2,187,351

UNITED STATES PATENT OFFICE

2,187,351

TELEGRAPH SENDING MACHINE

John A. La Hiff, New York, N. Y., assignor to The Vibroplex Co., Inc., New York, N. Y., a corporation of New York

Application filed January 9, 1939, Serial No. 249,843

9 Claims. (Cl. 178—82)

This invention relates to a telegraphic sending machine and refers more particularly to a semi-automatic telegraphic sending machine having an operating lever a portion of which is adapted to vibrate automatically for the purpose of transmitting "dot" signals.

Machines of this type which are used in prior art, often vibrate too quickly, with the result that incorrect messages are sent by an insufficiently trained operator. The damping means of such machines are often inadequate and the operating lever used for the sending of messages, often does not move sufficiently freely.

An object of the present invention is the provision of a semi-automatic telegraphic sending machine wherein the speed with which the "dot" signals are automatically transmitted may be quickly and conveniently varied to adapt the machine to the skill of the operator using the same.

Another object is the provision of a semi-automatic telegraphic sending machine wherein the operative length of the operating lever may be quickly and conveniently adjusted for the purpose of varying the speed of vibrations.

A further object is the provision of a semi-automatic telegraphic sending machine having simple, inexpensive and effectively operating damping means for the operating lever.

A still further object is the provision of a semi-automatic telegraphic sending machine wherein the operating lever is provided with effective supporting means and is so constructed that it can be easily manipulated and removed whenever necessary.

Other objects of the present invention will become apparent in the course of the following specification.

The objects of the present invention may be realized through the provision of a lever a portion of which is adapted to be manually actuated by a sidewise motion for the purpose of transmitting the "dash" signals, another portion of said lever being caused to vibrate in order to transmit

automatically the "dot" signals, the operative length of the lever being varied by constructing the lever of at least two parts which are so connected with each other that the relative positions of these parts may be easily and conveniently varied. The vibrations of the lever are damped by the use of a roller or the like which is suspended from a single post. The lever is firmly connected with a spindle the upper and lower ends of which are held in place by jewel bearings.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing by way of example preferred embodiments of the inventive idea.

In the drawings:

Fig. 1 is a plan view of a sending machine constructed in accordance with the principles of the present invention.

Fig. 2 is a plan view of the operating lever and of the various parts connected therewith.

Fig. 3 is a side elevation of the lever shown in Fig. 2.

Fig. 4 is a section along the line 4—4 of Fig. 3 looking in the direction of the arrows.

Fig. 5 is a section along the line 5—5 of Fig. 1.

Fig. 6 is a section along the line 6—6 of Fig. 1.

Fig. 7 is a section along the line 7—7 of Fig. 1.

Fig. 8 shows a portion of an operating lever of a somewhat different construction.

Fig. 9 is a section along the line 9—9 of Fig. 8; and

Fig. 10 is a section along the line 10—10 of Fig. 8.

The sending machine shown in Figures 1 to 7 of the drawings comprises a base 11 which may be made of Bakelite, metal, wood or the like and which supports a lower plate 12 Fig. 6. Two columns or posts 13 and 14 extend through the plate 12 and are firmly connected with the base

11. An upper plate 15 which is similar to the plate 12 and which is triangular in form, is carried by the columns 13 and 14 and is attached thereto by the bolts 16 and 17.

The main operating lever 18 Fig. 1 comprises a vibrator bar 19 carrying a projection 20 which is firmly connected with the bar 19 and is adapted to strike the cylinder 90 for the purpose of damping the vibrations of the lever.

The opposite end of the bar 19 is bifurcated and is provided with two parallel leg portions 21 and 22. The portion 22 of the bar is provided with two openings 23, one of which is shown in Fig. 4. Threaded openings 24 which are somewhat smaller than the openings 23, are provided in the other leg 21 of the bifurcated end portion of the bar 19 and constitute continuations of the corresponding openings 23. Set screws 25 extend through the unthreaded openings 23 and are screwed into the threaded openings 24.

The lever 18 is also provided with a vibrator spring 26 having an end which extends between the portions 21 and 22 of the bar 19 and which is provided with an elongated slot 27 enclosing the set screws 25.

The opposite end of the vibrator spring 26 is situated within a central slot provided in the main lever portion 28 Figures 2 and 3. The lever portion 28 and the spring 26 are firmly connected with each other by bolts or rivets 29 extending through the interengaging ends of these members.

The lever portion 28 is firmly connected with a threaded spindle 30 which extends through it. One end of the lever portion 28 is provided with a transverse opening 31.

The operating lever 18 also includes a handle 32 which is provided with a U-shaped yoke 33. The two lugs of the yoke 33 enclose the lever portion 28 and are provided with openings through which the spindle 30 extends. A hexagonal nut 34 extends through one of the lugs of the yoke 33 and is in engagement with the lever portion 28.

The handle 32 carries an insulating finger piece 35 which is actuated whenever it is necessary to produce "dash" signals. An insulating thumb piece 36 which is actuated for the purpose of causing the vibrations of the operating lever is connected with the handle 32 by the screw 37 and also by the spindle 38 which carries the finger piece 35 also.

The handle 32 carries a bolt 39 which is provided with a threaded end 40 carrying a round nut 41. The bolt 39 extends through the opening 31 and is surrounded by the spring 42.

The nut 39 is used for the purpose of regulating the tension of the spring 42 which holds the handle 32 normally against the lever portion 28.

As shown in Figure 3, the bolt 43 also extends through an elongated slot 44 provided in a plate 45 carrying the electrical contact 46. The plate 45 is held in place by the bolt 43.

The contact 46 is adapted to engage a fixed

contact 47 (Figure 1), which constitutes one end of contact screw 48 extending through a post 49 secured to the base 11. The two contacts 46 and 47 are used for the making of "dash" signals.

The dot signals which are made automatically are produced by a contact 50 carried upon one end of a U-shaped spring 51. The opposite end of the spring 51 is firmly connected by a rivet 52 to a plate 53. The lower end of the plate 53 is provided with an opening through which the bolt 54 extends. A nut 55 is screwed upon the projecting end of bolt 54.

The contact 50 carried by the U-shaped spring 51 may be brought into engagement with a fixed contact 56 constituted by one end of the contact screw 57 extending through a post 58 which is attached to the base 11.

The weight of the lever 18 may be adjusted through the use of an adjustable weight 54a having the form of a square body carrying a screw 55a and provided with a longitudinal slot through which the vibrator bar 19 of the lever 18 extends. The weight 54a may be shifted along the member 19 after the screw 55a has been unscrewed.

As shown more clearly in Figure 6 of the drawings, the spindle 30 is provided with two conical ends 60 and 61 which are journaled in jewel bearings 62 and 63, respectively. The jewel bearing 62 is carried by the lower end of a screw 63a which extends through a round nut 65 a threaded sleeve 64 carried by the upper plate 15.

The lower jewel bearing 63 is carried by a screw 66 which is situated in an opening 67 provided in the base 11. The screw 66 is screwed into a sleeve 68 which is carried by the plate 12.

A screw 74 carrying a nut 70 extends through the post 13 and has a free end which is situated adjacent the lever portion 28. Another screw 71 is situated opposite the screw 74 and is carried by the post 14. The screw 71 carries the nut 72. The two screws 74 and 71 are used to regulate the throw of the operating lever 18 and the parts connected therewith.

A coiled spring 73 has an end which extends through the lever portion 28. The opposite end 75 of the spring 73 surrounds an end of an adjusting screw 76, which carries a nut 77 and extends through the post 13 above the screw 74. The spring 74 the tension of which is regulated by the screw 76, presses the lever portion 28 normally against the end of the screw 71.

The base 11 also carries posts 78 and 79 (Fig. 1) which may be attached by the wires 80 and 81 to any suitable source of electrical energy which is not shown in the drawings. The post 79 is provided with a conducting plate 82 which may be brought into engagement with a lever 83 rotatably mounted upon a pivot 85 and having an insulating handle 84.

The contact post 78 is electrically connected with the contacts 50 and 46 by any suitable means well known in the art and not illustrated

in the drawings. The post 79 may be connected by means of the lever 83 with the contacts 56 and 47.

The device used for damping the vibrations of the lever 18 comprises a post 86 (Fig. 1) which is carried by the base 11 and which carries a rod 87 extending horizontally through an opening formed in the post 86. The rod 87 carries a U-shaped support 88 which may be somewhat tilted in relation to the horizontal plane, as shown in Figure 7. The support 88 carries a rod 89. A cylinder 90 is freely mounted upon the rod 89 and is situated between the projections of the U-shaped support 88.

The projection 20 is situated somewhat below the center of the cylinder 90 so that when the projection 20 strikes the cylinder 90 it will cause the support 88 to swing upward upon the rod 87, thus increasing the damping effect of the cylinder 90.

In operation, in order to send the "dot" signals of a message the operator moves the thumb piece 36 of the lever 18 to the right (looking in the direction of the arrows 6—6 in Figure 1), thereby rotating the lever portion 28 on the spindle 30 and compressing the spring 73 until the lever portion 28 strikes the free end of the screw 74. This sets the vibrator bar 19 of the lever 18 and the connected parts in vibration and causes a series of makes and breaks of circuit between the contact 50 carried by the U-shaped spring 51 and the contact 56. Thus the machine sends the "dots" of a message automatically, the number of the "dots" being determined by the length of time the operator holds the thumb piece 36 in the described position. As soon as the operator lets go of the thumb piece 36, the spring 73 will cause the return of the lever 18 back to its normal position.

In order to send the "dashes" of a message the operator moves the finger piece 35 in the opposite direction, thus turning the handle 32 upon the spindle 30 and bringing the contact 46 into engagement with the contact 47. Each time after a "dash" signal has been sent, the spring 42 returns the handle 32 back to its normal position.

In accordance with the present invention, the amplitude of the vibrations of the vibrator bar 19 may be easily regulated or adjusted to adapt the machine to the requirements or the skill of each individual operator; in order to vary the operative length of the vibrating portions of the operating lever 18 and thus vary the speed with which the "dot" signals are produced, it is merely necessary to unscrew the springs 25 and adjust the vibrator bar 19 in relation to the vibrator spring 26 until the two parts assume the required position. Then the screws 25 are fastened again and the machine is ready for operation.

Due to the provision of the jewel bearings 62 and 63 the spindle 30 will turn upon its bearings even if the manual force applied to the handle portion of the operating spring 18 is extremely

small. Thus the operation of the machine is considerably facilitated and any strain upon or cramping of the fingers is avoided.

Due to the inclined position of the cylinder 90 and the position of the projection 20 below the center of gravity of the cylinder 90 a perfect damping of the vibrator bar 19 is attained.

The operating lever 100 shown in Figures 8 to 10 of the drawings comprises a vibrator bar 101 and a vibrator spring 102. The vibrator bar 101 has a bifurcated end consisting of the leg portions 103 and 104 which are separated by the slot 105. The portion 103 is provided with a cylindrical slot 106 while a smaller threaded opening 107 is provided in the member 104 opposite the opening 106. The members 103 and 104 are also provided with alined openings 108 and 109, respectively.

The vibrator spring 102 is provided with a central elongated slot 110. The upper edge of the slot 110 has teeth 111 meshing with a toothed wheel 112 which is firmly connected with a disk 113 situated outside of the member 104. The toothed wheel 112 is provided with an inner threaded opening and a screw 114 situated outside of the member 103 is screwed into this threaded opening.

By means of this arrangement the operative length of the vibrator lever 100 may be adjusted at will, first by loosening the tightening screw 105 which extends through the opening 106 and is screwed into the opening 107. Then the screw 114 is rotated; the gear wheel 112 will rotate along with the screw 114, thus shifting the vibrator spring 102 within the slot 105. The operative length of the vibrator spring 102 and consequently the amplitude of the vibrations of the vibrator bar 101 may thus be quickly and conveniently varied.

It is apparent that the specific illustrations shown above have been given by way of illustration and not by way of limitation and that the structures above described are subject to wide variation and modification without departing from the scope or intent of the invention, all of which variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. In an operating lever for telegraphic semi-automatic sending machines, a resilient portion, a non-resilient portion having one end connected with an end of said resilient portion and means for varying the relative positions of said resilient and non-resilient portions to vary the amplitude of vibrations of a portion of said operating lever.

2. In an operating lever for a telegraphic semi-automatic sending machine, a vibrator spring, a vibrator bar having one end connected with one end of said vibrator spring, and means for varying the relative positions of said vibrator spring and vibrator bar to vary the amplitude of vibrations of said vibrator bar.

3. In an operating lever for a telegraphic semi-

automatic sending machine, a vibrator spring having an elongated slot formed in an end thereof; a vibrator bar having a slot formed therein, the slot of the vibrator bar receiving said end of the vibrator spring, and a tightening screw carried by said vibrator bar and extending through the two slots.

4. In an operating lever for a telegraphic semi-automatic sending machine, a vibrator spring having an elongated slot formed in an end thereof; a vibrator bar having a slot formed therein, the slot of the vibrator bar receiving said end of the vibrator spring, a non-threaded opening being formed in said vibrator bar on one side of the slot thereof, another threaded opening in alignment with the non-threaded opening being formed in said vibrator bar on the opposite side of its slot, and a tightening screw extending through the two slots, said tightening screw being screwed into the threaded opening and extending through the non-threaded opening.

5. In a telegraphic semi-automatic sending machine having a vibrating lever portion; a damping device for said vibrating lever portion, said damping device comprising a post, a support rotatably carried by said post, and a cylinder rotatably carried by said support and adapted to be engaged by said vibrating lever portion to damp the vibrations thereof.

6. In a telegraphic semi-automatic sending machine having a vibrating lever portion; a damping device for said vibrating lever portion, said damping device comprising a vertical post, a support swingably mounted in said post and extending normally at an acute angle to a horizontal plane, and a cylinder rotatably carried by said support and adapted to be engaged by said vibrating lever portion to damp the vibrations

thereof, the center of gravity of said cylinder being higher than any point of contact between the cylinder and the vibrating lever portion.

7. In a telegraphic semi-automatic sending machine having an operating lever comprising a vibrating portion and a non-vibrating portion connected with said vibrating portion; and a spindle extending through said non-vibrating portion and firmly connected therewith; jewel bearings supporting two ends of said spindle and means carrying said jewel bearings.

8. A telegraphic semi-automatic sending machine, comprising, in combination, an operating lever having a non-vibrating portion adapted to transmit "dash" signals, and a vibrating portion adjustably connected with said non-vibrating portion and adapted to transmit "dot" signals; damping means comprising a post, a support rotatably carried by said post, and a cylinder rotatably carried by said support and adapted to be engaged by said vibrating lever portion to damp the vibrations thereof; a spindle extending through said non-vibrating portion and firmly connected therewith; jewel bearings supporting two ends of said spindle and means carrying said jewel bearings.

9. In an operating lever for a telegraphic semi-automatic sending machine, a vibrator spring having an elongated slot formed in an end thereof; a vibrator bar having a slot formed therein, the slot of the vibrator bar receiving said end of the vibrator spring, an edge of the slot of said vibrator spring having teeth formed therein, and a toothed member rotatably mounted in said vibrator bar and meshing with said teeth to vary the operative length of said vibrator spring.

JOHN A. LA HIFF.

Presentation

Produced: 1948 - present
Patents: 2,187,351 filed January 9, 1939, issued January 16, 1940
Plate types: D6 - D9
Base colors: Chrome with gold-plated plate; gold-plated base.
Variants: Loss of adjustable mainspring after 1978.

The Presentation was the first bug to take full advantage of John La Hiff's 1940 patent, no. 2,187,351. Although the Presentation, first advertised in 1948, was initially referred to as a "Super De Luxe," it was in fact treated as a separate Vibroplex model. It included the features of the Deluxe Original, with its jewel bearings and a chrome plated base. But in addition, a gold plated brass plate was mounted on the base, and a La Hiff adjustable mainspring was used on the pendulum assembly. Not only could the pendulum weight position be adjusted to control speed, but the pendulum spring itself could be appropriately shortened or lengthened for "super-speed control."

For thirty years, the Presentation was marketed and advertised as a separate model. In 1979, however, it lost its adjustable mainspring. The Presentation bugs made in Maine became merely one of the variations of the Original. As a Deluxe with a gold-plated plate on the base, it also became a variation of the Iambic and, since the move to Alabama, of the Vibrokeyer.

In 1995, after a new owner took the Company to Alabama, a fourth model of the Original appeared: The "Presentation Gold." On this model, available in both the Original bug and the Iambic paddle, the base itself is gold plated. As with the Maine Presentation bug, however, the Alabama Original model remains simply a cosmetic variation of the Original Deluxe.

Collectibles and Oddities

The Presentation is the classiest looking bug that Vibroplex has made. On a shelf of Vibroplex bugs, it is the one that will stand out. But if you're able to find one, it is the original design with the La Hiff adjustable mainspring that will add the most value to your collection. Look for a New York nameplate, and double-check by looking for the two small screws where the mainspring joins the dot lever.

Amazing NEW 1948

Super DeLuxe VIBROPLEX

Reg. Trade Marks: Vibroplex, Lightning Bug, Bug



"PRESENTATION" MODEL

WITH
SUPER-
SPEED
CONTROL
MAIN SPRING

POLISHED CHROMIUM PARTS 24-K GOLD-PLATED BASE TOP

PATENTED JEWEL MOVEMENT



The "BUG" Trade Mark identifies the Genuine Vibroplex. Accept No Substitute.

You'll be surprised how easy it is to send with this New, *Super-DeLuxe Vibroplex key*. You'll be able to send better, faster, easier. No strain. No special skill required. Suits any hand or any style of sending. Speed range from 10 wpm to 40 wpm and beyond. Polished chromium parts mounted on 24-K gold-plated base top. Colorful red switch knob, finger and thumb piece. **DIE CUT** contacts and main spring. Extra large contacts. Non-slip rubber feet. Cord and wedge. \$25.00. Immediate delivery. Money order or registered mail. **FREE** catalog.

THE VIBROPLEX CO., Inc.
833 Broadway, New York 3, N. Y.

1948: A new model is introduced.

Vibrokeyer

Produced: 1960 - present
Patents: none
Plate types: D6 - D9
Base colors: Beige, chrome, gray crackle, gold, black texture.
Variants: Beige "Deluxe" model; nameplate orientation.

Vibroplex finally joined the electronic revolution by offering the "Vibro-Keyer" in 1960. (The spelling was changed to "Vibrokeyer" in the early 1980's.) The frame, pivots, lever and contacts of this single-lever paddle all came from the Original. A small phillips-head screw filled the tapped hole in the left arm where the bug's dot lever stop screw would have gone.

The new paddle arrived with great confusion. In its February 1960 review, *QST* mentioned that the base had a "wrinkle gray" finish, like the standard bugs at that time. In fact, it appeared with a beige finish. At the same time, Harrison Radio offered the Vibrokeyer with a "special gray finish" to match the Hallicrafters TO keyer the company was promoting. Then there were the red fingerpieces, "the DeLuxe Vibroplex contacts, main frame and super finished parts", and the red plastic button atop the frame. Was this a Standard or a Deluxe paddle?

A real Deluxe Vibrokeyer, with a chrome plated base, appeared in the spring of 1961. At the same time, the beige-based model became the Standard model. In the early 1980's, after the Company had been sold and moved to Maine, the Standard model base color was changed to gray to conform to the rest of the line.

Today, the Vibrokeyer made in Alabama comes in three models: The "Gold," with a 24K plated base and jewel bearings, the "Deluxe," with a chrome-plated base and jewel bearings, and the "Standard," with a "crisp textured finish black base."



First appearance in QST: January 1960.

Collectibles and Oddities

An early "beige DeLuxe" is interesting, but a better collectible might be the special "Hallicrafters gray" model sold by Harrison in the early 1960's. If nameplate orientation interests you, the Vibrokeyer offers three variations. At first, the plate was mounted transversely, and faced to the rear, away from the operator. Shortly thereafter, it was turned to face the right side. Today, the plate on the Alabama Vibrokeyer faces the operator.

Iambic

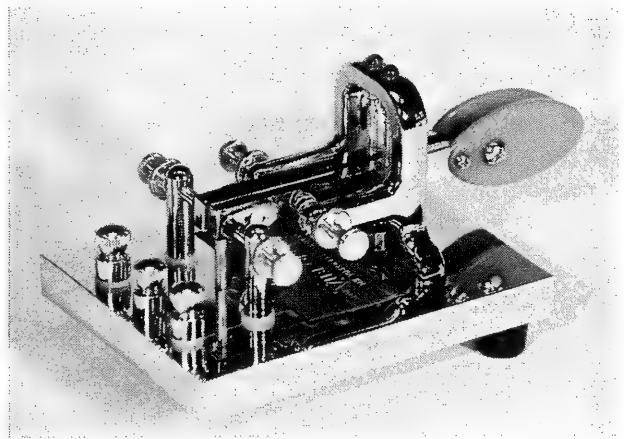
Produced: 1979 - present
Patents: none
Plate types: D8 - D9
Base colors: Gray crackle, chrome, gold-plated brass plate, gold plated, black texture.
Variants: None.

With the departure of the Company from New York and its re-establishment in Maine, several changes in the key lineup were made. The most noticeable was the addition of a new member of the family: the Iambic.

The Iambic is, as the name states, a dual lever electronic keyer paddle. It used the cast Original bug frame, and the early ads show a small phillips screw plugging the tapped hole in the left arm intended for the bug's main lever return spring adjustment screw. But most, if not all, of the units actually shipped had frames drilled specially for the Iambic, without the extra hole.

In contrast to the introduction of the Vibrokeyer, there was no confusion with the Iambic. From the start, it was offered either as a Standard model with a gray crackle-painted base, or as a Deluxe model with chromed base. About 1983, a third model, the Iambic Presentation, was introduced. Like the Presentation model of the bug, this was the Deluxe model with a gold plated brass plate on the base.

With the addition of the "Presentation Gold" from Alabama in 1995, the Iambic is now available in four models. This latest model does away with the brass plate; the steel base itself is gold plated. Today, the Standard model has the latest "crisp black textured finish" used on the Standard model bug and Vibrokeyer.



Deluxe Iambic model.

Collectibles and Oddities

There are no unusual mechanical variations of the Iambic. But we can predict that limited-edition models will become collectible. Because of its top-end price, the Iambic Presentation Gold will perhaps eventually achieve this status. And if nameplates are taken into account, the Maine (D8 plate) Iambic Presentation might already be considered collectible; they aren't making them any more.

Brass Racer

Produced: 1982 - present
Patents: none (though based on Hills patent no. 3,166,638).
Plate types: D8 - D9
Base colors: Brass on hardwood.
Variants: Triangular base Iambic and EK-1, and Square Brass Racer Iambic.

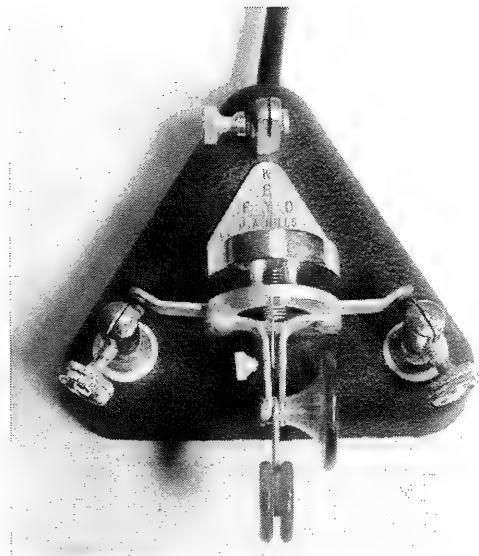
Until 1962, all commercial keyer paddles were vertical-pivot, single-lever types. A revolution in paddles for electronic keyers occurred in that year, when Joseph Hills, W8FYO, came out with a new paddle on a triangular-shaped base. It was still a single-lever type, but Hills had practically eliminated the pivot.

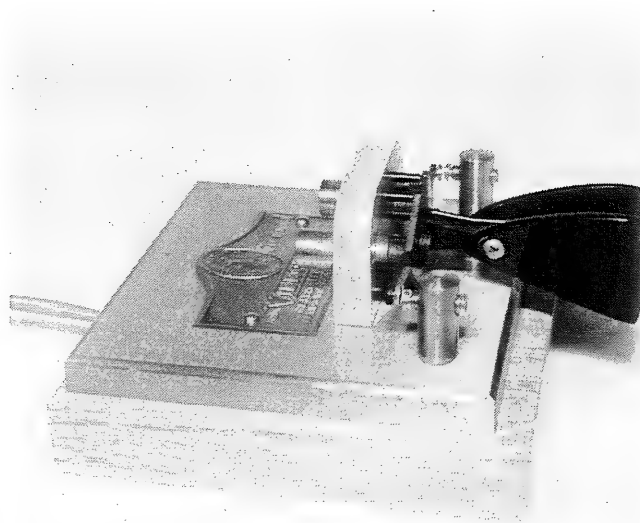
The FYO key (shown at right) incorporated a ring held by a spring against pins set into a fixed frame. The ring could be rocked on the pins in an almost frictionless design. But 1962 was also the year that iambic keying started to take off. Aware of its growing popularity, Hills soon modified his original design by splitting the ring vertically to create an iambic paddle.

By the time Hills' patent issued, he was no longer making his keys. But others saw the advantages in his invention. Several iambic FYO-type keys came and went in the market. HAL Communications made a dual paddle FYO briefly in the mid-70's. A couple of years later, HAMCO acquired HAL's inventory and tooling, and brought out a redesigned key using magnets in place of springs for tension. Bencher came out with their FYO-style paddle in 1977. The Vibroplex Company had its new, old-style Iambic, but would they jump on the FYO bandwagon?

The answer came in late 1982, when Vibroplex bought the HAMCO design and introduced the Brass Racer key. The Brass Racer Iambic is a magnetically tensioned dual lever paddle with a solid brass frame and plate. Like the HAMCO keys, it is mounted on a hardwood base. The Brass Racer EK-1 appears identical to the Iambic, but it has a potentiometer (speed control) knob on the right side. Inside the base is a circuit board and battery for an electronic keyer; the circuit is based on the Curtis 8044 keyer-on-a-chip.

The triangular Brass Racer was too small to permit mounting the standard nameplate on the base, so a reproduction of the plate in the form of a plastic metalized sticker was used on the bottom of the key. A serial number could not be stamped on this sticker as it could on the metal nameplates, and rather than reserve a series of numbers for the Brass Racer, a new series of numbers was printed on the stickers. These serial numbers consisted of five digits, with the first digit being zero.





Brass Racer Iambic on customary base (L), and on new square base (R).

In 1996, a customer asked The Vibroplex Company (then in Mobile, Alabama) to make him a Brass Racer with a square base. He got his wish, and it must have seemed like a good idea to the Company; the shape was easy to manufacture, and it provided room for the standard Vibroplex nameplate to be mounted topside. The Square Brass Racer Iambic soon joined its triangular brethren as an addition to the Brass Racer line.

Collectibles and Oddities

The collectible keys here aren't the Vibroplex Brass Racers themselves, but the keys on which they are based. The Hills FYO, in either its single- or dual-lever version, is scarce and highly collectible. The HAMCO paddles, as the direct predecessors of the Brass Racer, should be considered by a collector of Vibroplex keys. But vigilance is required; the Brass Racer is practically identical to the HAMCO "Scotia" on which it is modeled, and both paddles have their labels on the bottom. If you see a "Brass Racer" on a swapmeet table, turn it over and check the label. It may be a HAMCO paddle.



Straight Key

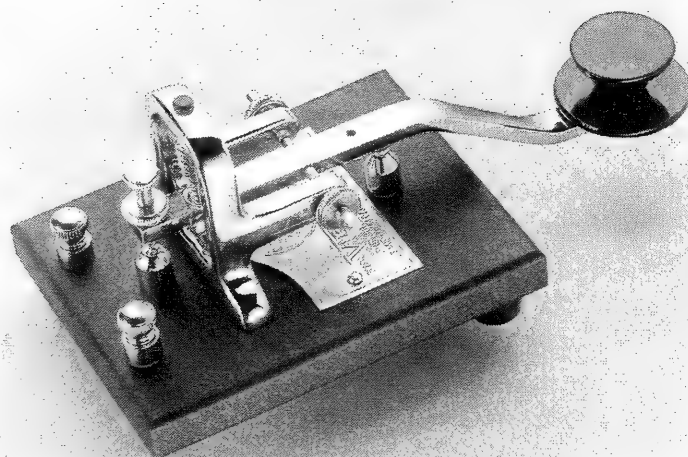
Produced: 1996 -
Patents: none
Plate types: D9
Base colors: Chrome, black.
Variants: none

For the first time in its history, The Vibroplex Company is making a straight key (also called a hand key). The Deluxe model of the new key was introduced at the Dayton Hamvention in the spring of 1996. Unlike straight keys offered by other companies over the past decades, which were essentially copies or variations of Bunnell's 1881 steel-lever key, this new key is unmistakably a Vibroplex. The base of the Straight Key is the same as that used on the Vibrokeyer and Iambic paddles. The frame is the same as that used on the Original

bug, but reversed so that the arms (which now hold the lever pivot screws) face the operator.

The prototype Straight Key was a black-based standard model; it was given serial number 100100. Number 100101 is on the first Deluxe (chrome-plated base) Straight Key, shown here. These first two keys will remain in the Company collection. Production models of the Straight Key are expected to receive numbers from 100102 up.

A "Gold" model of the Straight Key will also be offered to round out the line.



Collectibles and oddities

Will the Company continue to produce the Straight Key? Will its design change in the near future? Will a low serial number add collector value? The answers to such questions will determine whether this new key is a collectible already, or whether it will become one in the future. Just what the answers will be is something you will have to decide yourself.

Other Martin Keys

Those who set out to collect Vibroplex keys need not limit themselves to the bugs made by Horace Martin or The Vibroplex Company, Inc. Keys related to, or connected with, Martin or the Company can broaden the historical context of your main collection. The HAMCO paddle, the predecessor to the Brass Racers, has already been mentioned. Other keys include the "Flash Keys" made by the sons of Horace Martin under the name of Martin Research and Manufacturing Corp. in the late 1930's, and those made by Bunnell in the 1940's.

The Martin Flash Keys are scarce, because J.H. Bunnell & Co. acquired the rights to make the Flash Keys shortly after they appeared. These "Bunnell-Martin Flash Keys" were offered for at least five years, and consequently are easier to find. Martin Research (and Bunnell) offered four Flash Key models. Three of them were obvious copies of existing Vibroplex keys. The fourth, the "Amateur Flash Key" (Bunnell 5-46), with a single-post pivot and a simple vertical damper, is reminiscent of the much earlier Midget. This list gives the Martin Research model name, the key after which it is patterned, and the Bunnell model number.

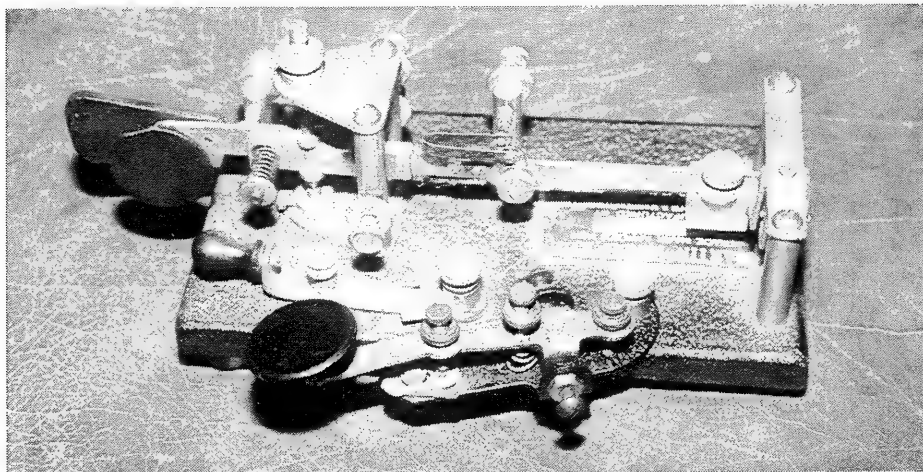
Professional No. 1	(Original)	(Bunnell-Martin type 5-48)
Professional No. 6	(Lightning Bug)	(Bunnell-Martin type 5-45)
Junior Flash Key	(Blue Racer)	(Bunnell-Martin type 5-47)
Amateur Flash Key	(Midget)	(Bunnell-Martin type 5-46)



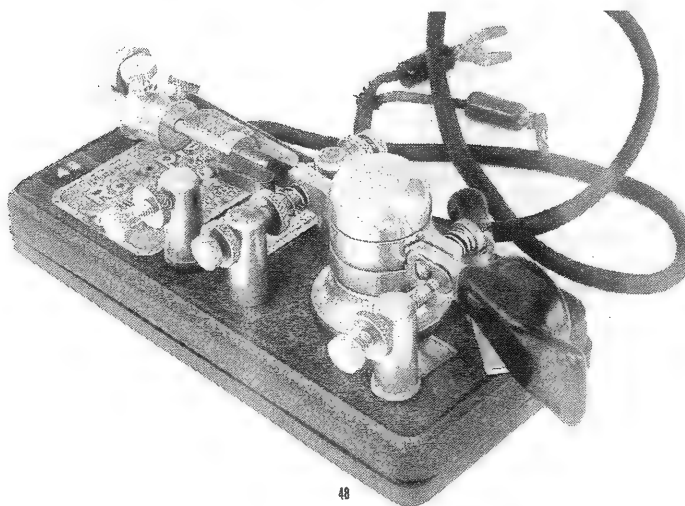
43

Martin Research and Manufacturing's "Professional No. 6" Flash Key.

Martin Research also made a "Piggy-Back" key, shown here attached to a Flash Key. This small straight key was affixed to the wire terminals of a standard bug, and was offered to "operators who desire an occasional change from the semi-automatic type of transmitting machine." The Piggy-Back key is rare.



Another Martin-related key is the "Rotoplex," invented by Horace Martin. The novel feature of this bug is that the levers are "formed with relatively flat surfaces rotatively bearing upon one another" using ball bearings. The patent (no. 2,228,469) issued in January 1941.



The Rotoplex was marketed by Martin, doing business as Rotoplex Incorporated (New York and Southern Pines, N.C.). All manufacturing seems to have been done by the Jas. Clark, Jr. Electric Co. of Louisville, Kentucky. The key was available in standard finish with a black enameled base, or with a mirror-chrome or satin-chrome finished base for an extra two dollars. A left-handed model was also available for an extra five dollars.

The Rotoplex was supplied to the Signal Corps during WWII; the military Rotoplex carries an additional, smaller, plate identifying it as a J-36 (shown above). According to a Rotoplex Inc. flyer, it was also supplied to the U.S. Navy.

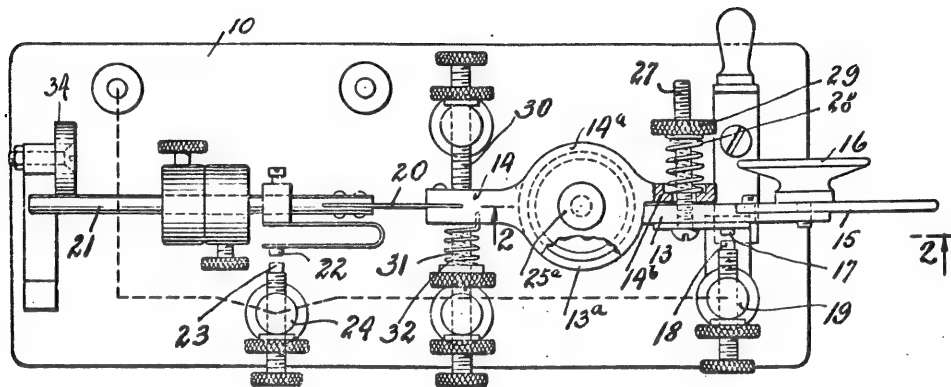
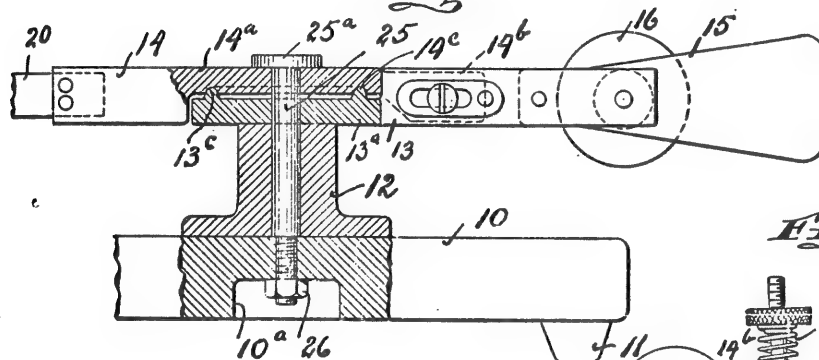
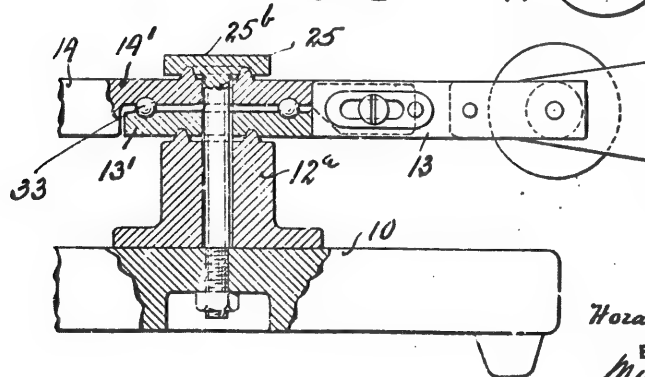
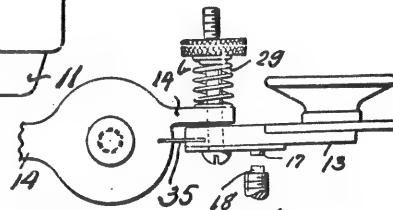
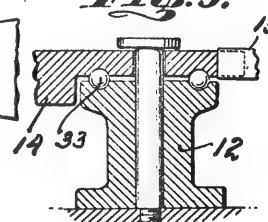
Jan. 14, 1941.

H. G. MARTIN

2,228,469

SEMI-AUTOMATIC TELEGRAPHIC SENDING MACHINE

Filed April 4, 1940

Fig. 1.*Fig. 2.**Fig. 3.**Fig. 4.**Fig. 5.*

INVENTOR
Horace G. Martin
 BY
Wm. V. Ordway
 ATTORNEY

Collectible Keys and Accessories

If you need a model or variation of a key for your collection, it doesn't matter if the model is "collectible" or not. If it fills a hole in your collection, you buy it if the price is reasonable (relative to the scarcity of the model) and the condition meets your standards.

If you don't need the key, you might consider obtaining it if it is worthwhile for trade. It may be easiest to obtain the keys you want from other collectors, and often they aren't interested in selling. But they will trade, if you have something they want. Since trade value is usually related to scarcity, knowing what's scarce and what's not is the key to deciding what to consider and what to pass over at a flea market.

No matter the model, age is important, and condition doubly so. Certain variations, such as a colored base on an Original, can add value to an otherwise common model. A left-handed version of any bug is quite collectible. But here, we'll consider the relative collector value of the typical versions of each of the models. Based on the number of collections that are missing a particular model (the higher the number, the scarcer the key) or the number that contain a particular bug (the lower the number, the scarcer the key), the list reads like this:

Midget	Very rare. Two are known.
Upright	Rare. Less than a dozen are known.
Two-Lever	Scarce. Missing from most collections.
The Vibroplex	(Pre-1908 models) Scarce.
Model X	Semi-scarce, but eventually found.
Martin Junior	Uncommon.
Zephyr	Uncommon.
Blue Racer	Early (No. 4) becoming uncommon.
Presentation	Pre-Maine models are uncommon.
Lightning Bug	Common, but pre-WWII uncommon.
Champion	Common.
Original	Common.

Not included in this list are the Atlanta bugs. Briefly: Atlanta is very rare (two are known), and Norcross is rare (perhaps a dozen are known).

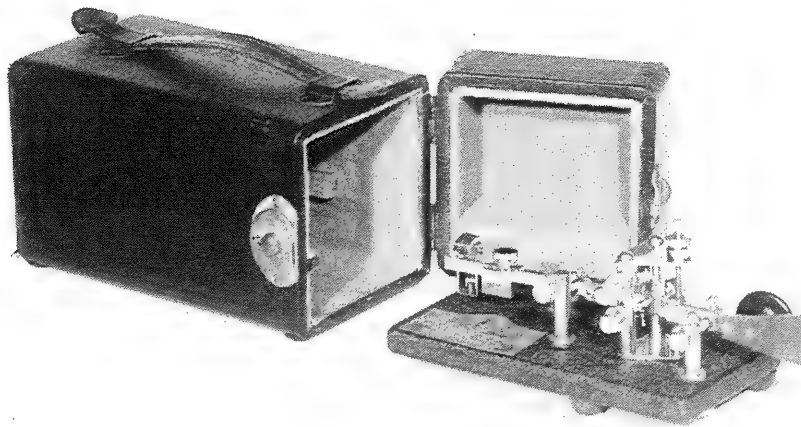
Don't try to use this list as a guide to creating your own collection; luck plays an important part in finding keys. The *last* model found by one collector who now has every model in his collection was the Zephyr. On the other hand, don't let the list discourage you. If you despair of finding an Upright, for example, consider the words of collector Randy Cole, KN6W:

"The barriers to collecting aren't all that huge for somebody who learns all he can about what he's collecting, makes his interest known, and keeps his eyes and ears open. Yes, it's harder than it used to be. No, he's not going to have the world's outstanding collection in two weeks flat. Time and effort are still effective substitutes for money."

Finally, you don't need the scarcest keys to have a nice collection. In the first edition of this book, I suggested that a nice representative collection might consist simply of the six models available in the 1940's. That's still true today. Keep in mind that your collection doesn't have to be the same as everyone else's. If your collection, whether of three keys or thirty, tells an interesting story, it does all that an effective collection is supposed to do.

Collectible Accessories

The hobbyist who collects Vibroplex keys will often come across other items associated with them. One popular item is the carrying case. The telegraph company provided a straight key, screwed to the operating desk, for its operators, so the operator of decades past carried his own bug to work.



Vibroplex Champion (black crackle base) with carrying case.

Early Vibroplex carrying cases were wood (J.E. Albright offered a "polished dark oak" case in a 1911 ad); later they were covered in black morocco fabric. By the 1930's, The Vibroplex company referred to their case finish as "simulated black morocco." Cases supplied from Maine and Mobile are of modern, molded styrene with a black "moroccan grained finish" and a foam interior. As expected, the cases are not as common as bugs, but when they are found, it is often with a bug inside.

Another desirable item, and necessary to the landline telegrapher's use of a bug, is the "cord and wedge." The cord is attached to the bug's wire terminals; at the other end of the cord is a wedge-shaped connector. When the operator sat down at the operating desk, he'd remove his bug from its carrying case, set it on the desk, and plug his bug into the straight key.

The wedge is made of two flat strips of brass separated by a strip of insulating material. This was "wedged" (hence the name) between the straight key's frame and the flat metal connector strip, or leaf, which runs from the key's lower contact (anvil) to its rear wire terminal. As with the carrying cases, wedges are usually found attached to a bug. The cloth cover of the cord extends beyond the wires, so that it can be tied to one of the bug terminals as a stay cord.

Most early wedges are stamped on one of the brass strips with the maker's name. Lionel and Western Union are just two that can be found. But for the Vibroplex collector, a Vibroplex (common) or an Albright (scarce) wedge adds interest to the collection.

A copy of *The Phillips Code*, by Walter P. Phillips, would fit nicely on the display shelf. Phillips, it will be recalled, was an early financial backer of Horace Martin's work. This booklet contains abbreviations and codes used by wire and radio telegraphers, and was published starting in 1879 in various editions and bindings. It was sold by (and after 1950, published by) The Vibroplex Company for years.



Latest Vibroplex accessories: key chain and coffee mug.

Early advertisements, whether from United Electrical Manufacturing Co., Albright, or The Vibroplex Company, will enhance your collection of Vibroplex keys. An ad placed next to the key it illustrates gives the key a historical context. If you've found an early radio magazine at a swapmeet and don't want to cut the ad out, a good photocopy will accomplish your purpose.

Finally, don't overlook those non-Vibroplex items which will serve to interpret your collection of bugs. Martin developed the Autoplex and the Vibroplex for landline telegraph operators, so a sounder and a main-line relay would be relevant to explaining the use of the keys. A code-practice oscillator or a keyer with sidetone is also useful for demonstrating the operation of a bug or paddle to non-ham visitors.

Today, The Vibroplex Company offers accessories for the Vibroplex Collector. Their tee-shirt, baseball cap and car license plate will let others know of your interests, and may help you snag a few keys at flea markets. The Company's coffee mug is especially appropriate for the operating desk.

Opposite: Advertised in 1979 but never produced, the 2M transceiver.



For some, only the best is good enough.

In every discipline there is one definitive statement of quality. In driving it's Rolls Royce, and in amateur radio it's Vibroplex. Vibroplex introduces the definitive statement for 2m FM Transceivers: The Vibroplex 225 SL. From now on, all others will be compared with its quality, performance, and sense of pride it will give its owners. Since 1890 Vibroplex has set the standard in its field, and Vibroplex owners have been perceived by their fraternity as the highest achievers and most skillful practitioners of their art. Frankly, the Vibroplex 225 SL is not for everyone. It is for those who wish to defy mediocrity; who wish to state that they appreciate owning only the best. We know you'll agree.

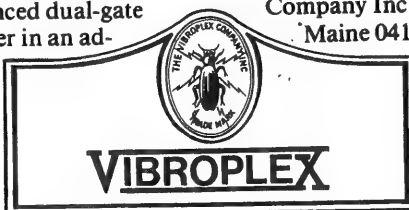
Like our world famous "bugs", our design concept was simple. First we built a unique transceiver with unmatched performance characteristics; then we added advanced digital circuitry to allow you to operate it to suit your own style. We think that amateurs who want to operate in style, with the best equipment, will have only one choice: the Vibroplex 225 SL.

In designing the ultimate 2m radio, we asked you, the customer what you wanted. Here is what you said: "... front end selectivity," "... a good receiver," "... eliminate intermodulation." And we listened. Never before has such a superior receiver been built. By using an advanced dual-gate MOSFET and a five-pole, high-Q torodial filter in an ad-

vanced circuit design intermodulation is a thing of the past. Our specs say we're the best and your field test will prove it. Add state-of-the-art 10 pole filters and you have IF adjacent channel selectivity of remarkable quality. We say we have the best transceiver on the market. When you test it, we know you'll agree. Next you said: "... make it flexible," "... easy to operate," "... good looking." Again we listened.

Designed for mobile or fixed use, this radio is microcomputer based to provide unequaled operating flexibility; sixteen completely flexible, programmable memory channels (no diodes); memory channel monitoring (lets you operate on one channel while monitoring another for a friend); any transmitter off-set (programmable from the front panel); two scanners—one to tune the band, the other to scan the memory channels; selectable pause/latch, pause defeat feature with programmable pause from .5 sec. to 10 sec. This feature takes all the effort out of making the next contact. Full 1 year Vibroplex warranty against defects. And good looking? Well, you tell us!

For a brochure on the most exciting radio this year, write us, or better yet, give us a call. But, if you are really serious, ACT NOW to be sure of receiving yours soon. The Vibroplex Company Inc., P.O. Box 7320, 476 Fore Street, Portland, Maine 04112, (207) 775-7710.



"the oldest name in amateur radio"
Since 1890

APPENDIX A: Addresses of the Company

The address on the nameplate of your Vibroplex key gives you a hint of the history and activities of the Company at the time it was made. Martin's Vibroplex key was first made by his United Electrical Manufacturing Company (U.E.M.), which made its predecessor, the Autoplex. In 1907, Martin and U.E.M. moved to Norcross, Georgia. Vibroplex keys were then produced in Georgia for the next few years. During 1907 and 1908 they bear the Norcross plate; in 1908 the U.E.M. company was dissolved, and Martin moved to Atlanta. There, he made Vibroplex keys under the name "Martin Manufacturing Company" from 1908 to 1910.

When Martin returned to New York in late 1910, he resumed manufacture of the Vibroplex keys. By early 1911, Vibroplex keys were being sold through J.E. Albright's shop at 253 Broadway.

Martin's New and Improved VIBROPLEX

Reg. Trade Marks Vibroplex Bug Lightning Bug



Transmits perfect signals at any desired speed. Easy to learn and operate. Saves the arm. Used and recommended by more than 85,000 wireless and commercial operators.

Special Large Contacted Vibroplex

Equipped with 3-16 inch contact points to break high current without use of relay\$25.

Sent on receipt of price

THE VIBROPLEX CO. Inc.

825 Broadway, New York *Established 1890*
 Brooklyn: 796 Fulton St.

New Improved Single-Lever
Japanned Base, \$17 Nickel-Plated, \$19

April 1925 QST ad carries both 825 Broadway and Fulton Street addresses.

"Earliest" or "latest" dates based on a nameplate address can't be critically accurate. As the listing here indicates, not until 1915 was a street address placed on the Vibroplex nameplates. In addition, older plates were used up even after a move to new quarters. For example, when Peter Garsoe bought the Company in 1978 and moved it to Maine, the first keys he sold still carried the New York plates. (A paper "new address" sticker was affixed to the base to indicate its Maine source.) The first Maine plates (the D8 type) were first used in 1979.

The most recent move to Alabama was a similar story. S. Felton "Mitch" Mitchell, Jr., WA4OSR, who bought the Company in 1994, used up some Maine plates, or sold keys previously made in Maine, until his Mobile plates were ready the following year.

Further, the Company's appearance at a location does not mean that the address was used on a nameplate. As mentioned, the second and third type plates used in 1906 and 1907 (types A2 and A3) include no location information at all; this is also true of the Maine (D8) plate. The 832

Broadway address was never used on a nameplate; during the years the company had its offices at this address, all plates carried the 796 Fulton Street, Brooklyn, address, which seems to have been the assembly shop. And although it appears that the Company had a Fulton Street presence into the 1950's, that address ceased appearing on plates after Vibroplex moved its offices to 833 Broadway in 1941. Finally, while the Company's administrative and sales offices are today located in Mobile (at the address on the nameplate) and the parts are made in Alabama, assembly of the Vibroplex products is done at 608 Jefferson Street in LaGrange, Georgia.

The dates given below are the dates when the Company actually occupied the given address, and not necessarily the dates when the address appeared on the nameplate. The comment following the date indicates the information (if any) that appeared on the nameplates of the era.

New York:

United Elect. Mfg. Co. 1905 to 1907 ("New York" on A1 plate)

Georgia:

U.E.M., Norcross 1907 to 1908 ("Norcross")

Martin Mfg. Co., Atlanta 1908 to 1910 ("Atlanta")

New York:

253 Broadway (Albright) 1910 to 1915 ("New York") (note 1)

253 Broadway ("Inc.") 1915 to 1920 (street given) (note 2)

825 Broadway 1920 to 1935 (street)

796 Fulton Street 1925 to (1953?) (street) (note 3)

832 Broadway 1935 to 1941 (no 832 plate)

833 Broadway 1941 to 1978 (street)

Maine (Portland): No address on the plate.

476 Fore Street 1978 to 1986

98 Elm Street 1986 to 1994

Alabama: Mobile address given on the plate.

Mobile, Alabama 1994 to present

LaGrange, Georgia 1994 to present (shop, see text)

NOTES:

1. 253 Broadway is listed twice, first as J.E. Albright's shop, then as the home of "The Vibroplex Company, Inc.", which was incorporated in 1915.
2. After incorporation in 1915, a new plate was designed which included the street address (and the serial number) for the first time.
3. The 796 Fulton Street address (in Brooklyn) was used concurrently with the main offices on Broadway (in Manhattan). The Fulton Street address appears in *QST* ads only twice: In April and May 1925. It was, however, used long thereafter on catalogs, flyers and letterheads (together with a main office address). The 1953 end date is uncertain, and is based on its use on a company letterhead dated that year.

APPENDIX B: Patent List and Index

The following is a list of patents owned or acquired by The Vibroplex Company and which contributed to the development of the Vibroplex keys. The year the patent issued and the name of the inventor is given. This is followed by the model to which the patent directly contributed, and the page on which the patent appears in this Guide.

732,648	1903, Martin	Autoplex	20
767,303	1904, Martin	Release mechanism bug (not made)	34
Patent 767,303 is mistakenly given as 763,303 on the "bug" name-plates (types D1 - D5).			
812,183	1906, Coffe	Mecograph (vertical bug)	28
842,154	1907, Martin	"The Vibroplex"	40
1,042,457	1912, Martin	duplex contact (not made)	50
1,043,449	1912, Martin	Early ("1912") Model X	53
1,260,008	1918, Martin	Upright (Vertical)	62
1,445,226	1923, Martin	Improved Vibroplex (dash lever)	44
2,187,351	1940, La Hiff	jewel bearings, adjustable mainspring	81

In addition to the above patents, The Vibroplex Company acquired the patent rights of Royal L. Boulter, of Los Angeles, California, a prolific inventor of telegraph keys and improvements. These patents are:

1,074,831	1913	1,170,796	1916
1,109,818	1914	1,178,291	1916
1,110,373	1914		

The only Vibroplex nameplate to mention any of the Boulter patent numbers (and it lists all of them) is plate type C2.

APPENDIX C: Nameplate Legends

type	legend	comments
A1	The Vibroplex patented Aug. 9, 1904 by Horace G. Martin New York	Plates A1, A2 and A3 appear on Original models only.
A2	The Vibroplex Horace G. Martin's patents no. 732,648 no. 767,303 others pending	No address on this plate.
A3	The Vibroplex Horace G. Martin's patents no. 732,648 767,303, & 842,154 others pending	No address on this plate.
Norcross	The Vibroplex Horace G. Martin's patents no. 732,648, 767,303 & 342,154 United Elec. Mfg Co. Norcross, Ga.	Last number should be 842,154.
Atlanta	The Vibroplex manufactured by Martin Mfg. Co. Atlanta, Ga.	
B1	The Vibroplex manufactured by Horace G. Martin New York	Used on Double Lever keys only. No serial numbers appear on these keys.
B2	The Vibroplex trade mark manufactured by Horace G. Martin New York	Used on Model X keys only.
B3	trade The Vibroplex mark pat. June 30, 03, Aug. 9, 04, Jan. 22, 07, others pending Horace G. Martin New York, U.S.A.	Primarily used on Model X keys (a few found on Originals)

-
- B3x trade The Vibroplex mark
 84356 Nov. 28 1911 Trademark registration number and date.
 pat. June 30. 03. Aug. 9. 04.
 Jan. 22. 07. Oct. 29. 04.
 Nov. 5. 12. others pending
 Horace G. Martin, new York, U.S.A.
- B4 trade The Vibroplex mark
 84356 Nov. 28 1911 Trademark registration number and date.
 pat. Aug. 9. 1904. Jan. 22. 1907.
 Oct. 29. 1912. Nov. 5. 1912.
 others pending
 Horace G. Martin, New York, U.S.A.
- C1 trade "Vibroplex" mark
 No. _____
 U.S. patents no.767,303, no.812,183,
 no.842,154, no.1,042,457, no.1,043,449.
 The Vibroplex Company, Inc.
 253 Broadway, New york.
- C2 trade "Vibroplex" mark The only plate to list the Boulter patents.
 No. _____
 U.S. patents 767,303, 812,183, 842,154, 1,042,457,
 1,043,449, 1,074,831, 1,109,818, 1,110,373, 1,170,796, 1,178,291
 The Vibroplex Company, Inc.
 253 Broadway, New York.
- C3 trade "Vibroplex" mark
 No. _____
 U.S. patents no.767,303, no.812,183,
 no.842,154, no.1,042,457, no.1,043,449, no.1,260,008.
 The Vibroplex Company, Inc.
 253 Broadway, New York.

(Note: Company name and trademark information omitted from following bug plate data.)

- D1 U.S. patents:
 763303 First number should be 767303.
 812183
 842154
 1042457
 1043449
 1260008
 825 Broadway, New York.

D2	U.S. patents: 763303 812183 842154 1042457 1043449 1260008, 1445226 825 Broadway, New York.	First number should be 767303.
D3	U.S. patents: 763303 812183 842154 1042457 1043449 1260008 1445226 796 Fulton St., Brooklyn, N.Y.	First number should be 767303.
D4	U.S. patents: 763303 812183 842154 1042457 1043449 other 1260008 patents pending 796 Fulton St., Brooklyn, N.Y.	First number should be 767303.
D5	U.S. patents: 763303 812183 842154 1042457 1043449 other 1260008 patents pending 833 Broadway, New York, N.Y.	First number should be 767303.
D6	patented 833 Broadway, New York, N.Y.	
D7	(no patent data) 833 Broadway, New York, N.Y.	
D8	(Maine plate: no patent data, no address)	
D9	(no patent data) 11 Midtown Park, E., Mobile, AL USA	

APPENDIX D: Base Finishes

The base finish on a Vibroplex bug is a good method of determining a rough age, since the cut-off years of the various base colors are easily committed to memory. These begin with the first finish, black japan with gold pinstriping. Japan, a hard, glossy enamel coating, was used from 1905 until 1939. The gold striping around the top edge of the base used in conjunction with the japan finish is sometimes almost completely worn off.

However, when the No. 4 Blue Racer first appeared in 1914, it carried a blue japan finish; from about 1919 (and until 1939), the standard finish for the No. 4 became black japan.

During the black japan period, other optional base finishes were available. The most common is nickel plating. Colored base finishes in red, blue and green were first advertised in 1929, and were available until 1936. These colors were offered only for the Original, No. 4 (Blue Racer) and No. 6 (Lightning Bug). In most cases, the color was applied over the standard black finish; on turning the key over, the black japan is evident. The blue finish is scarce; red and green are rare.

In 1939, the standard base finish became a black crackle (sometimes called black wrinkle) paint. Shortly thereafter, a Deluxe option which included a chrome-plated base became available.

During WWII, chrome not being available, the Deluxe keys were finished with a "battleship gray" paint. This variant is somewhat uncommon, because of the limited timeframe during which it was used. After WWII, chrome reappeared on the Deluxe models, and remains to the present day.

In the early 1950's, the standard finish changed once again, from black crackle to gray crackle. When the Vibrokeyer was introduced in 1959, it sported a beige crackle finish. In the early 1960's a special Hallicrafters edition of the Vibrokeyer became available for a brief time; these had a gray finish.

About 1979, shortly after the Company was sold and moved to Maine, some bugs were finished in beige, and a very few in brown ("sienna brown," one collector calls it). But soon, the standard gray finish was resumed, and used on the Vibrokeyer as well. Today, the standard finish for the Vibroplex keys made at Mobile is a "crisp black textured finish base."

In addition to the gold-plated plate on the Presentation models (bug and Iambic), the "Gold" models (bug, Iambic, Vibrokeyer, and not long after this is written, the Straight Key) have the base itself gold plated.

**The NEW Easy-Working
VIBROPLEX No. 6**

Reg. Trade Marks: Vibroplex; Bug; Lightning Bug

In Attractive Colors Blue Green Red

Hundreds of operators have traded in old models for this NEW Vibroplex, because it is EASIER to handle. Your old Vibroplex accepted as part payment

Blue, Green, Red or Black...\$17 **Nickel-Plated...\$19**



Famous Improved VIBROPLEX

Used by tens of thousands of operators because of its ease and perfection of sending. Colors: Blue, Green, Red or Black, \$17 Nickel-Plated...\$19



Special Radio Model Extra Large, Specially Constructed Contact Points for direct use without relay. Colors Blue, Green, Red or Black **\$25**

Specify color when ordering

Remit by Money Order or registered mail

THE VIBROPLEX COMPANY, Inc.

825 Broadway, New York City

Cable Address: "VIBROPLEX" New York

1929 ad offered colored bases.

Notes and References

This section includes many of my sources of information, additional information on the subject of the main text, and other notes and extraneous matter that seemed relevant. I hope that this material will encourage your own research into Vibroplex keys or into one of the many unexplored areas of telegraph history.

Abbreviations used in this section:

AWA:	Antique Wireless Association Inc, 59 Main Street, Bloomfield, N.Y. 14469
Holly:	<i>The Vibroplex Company, Inc.</i> by William R. Holly, K1BH (The Vibroplex Company, Inc., 1990). Available from the Company, at 11 Midtown Park East, Mobile, Alabama 36606.
Moreau:	<i>The Story of the Key</i> by Louise Moreau, W3WRE (<i>Morsum Magnificat</i> , 1995). A reprint of Moreau's series originally appearing in <i>Morsum Magnificat</i> numbers 6 through 11, 1987 - 1988. Page references are to the reprint book.
SN:	Serial number (on a key).
TVC:	<i>the Vail Correspondent</i> , a quarterly journal for telegraph instrument collectors published by the author (P.O. Box 88, Maynard MA 01754).

The Patents

The patents have been recreated by me to ensure legibility. No corrections were made. Any errors that appear (for example, "spring 74" in the La Hiff patent) were copied from the original. Each patent immediately follows the chapter for the particular key that it reflects.

List of Models

As noted in the footnote, the Martin Junior can be considered to have been introduced in 1921, although it was then merely a base option for the Original model.

Model versus production years chart

Thanks to Dave Pennes, WA3LKN, who suggested that a "chart showing when the various bugs were made and when they overlapped would be nice," and for providing a sketch of what such a chart should look like.

Parts of the Bug

The shape of certain parts changes over the years. For example, the early, squared-off frame and damper gave way to a rounded style made by high-pressure casting in the early 1940's. (Some collectors refer to the new damper as a "hooded" style.) A few of the changes noted by collector Rob Mooney, WD4JCB, are: The insulators beneath the dot and dash posts, originally fibre topped by a metal washer, were changed to a nylon washers. The rounded rubber feet were replaced with straight-sided, conical feet. The binding post nuts changed from a flat-top style with a through-hole, to a rounded top nut with a blind tapped hole. All slotted screws were eventually replaced with phillips-head screws. And the method of attaching the dot contact to the pendulum on the flat-pendulum models changed from a screw soldered to the pendulum, to a screw inserted into a tapped hole in the pendulum.

Voiding of trademark "bug": The fight was over Bunnell's use of the term "Gold Bug" on its semi-automatic key. See Holly, p. 27. A major article on the Gold Bug appeared in TVC no. 16.

Trunnion misspelled: See, for example, the Vibroplex ad in *CQ*, February 1960, p. 122 ("trunion").

U-shaped dot-contact spring: Moreau said (and I repeated in the first edition) that the dot contact on the first ("1904") Vibroplex used "a straight strip of metal attached to the pendulum but by 1906 Martin had changed

it to the familiar 'U' style of mounting." *Morsum Magnificat* no. 8 (Summer 1988), p. 3; *Story of the Key* (G.C. Arnold Partners, 1995), p. 23. Today, I have my doubts. Although Moreau shows (at fig. 3.4) a 1905 Vibroplex with a flat dot spring on the pendulum, it is questionable whether this was "first" (see Holly, figs. 10 and 11), or even whether it's an original part (the paddle, at least, on her bug is a replacement).

Identification of the Models

Pendulum type can also be used to differentiate the six models (flat on the No. 6 Lightning Bug, Zephyr and Champion, round on the others), but this simply follows frame design.

The 3" wide base was reportedly a "special order" option for the No. 4 key. Existing examples are, however, rare; only one such key is known.

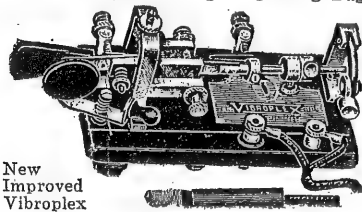
Mis-identification of models: See TVC no. 16, p. 17.

Nameplates, Serial Numbers and Decals

Dating of plates: While the advertised date of a change in Company address has been assumed to be coincident with its occurrence, the actual appearance of a new plate seems to lag by a year or so; compare the plate dating to the dates given in Appendix A: Addresses of the Company. *The Railroad Telegrapher* "More than xx in use" ads were also used as a check: November 1919, more than 70,000; February 1920, 75,000; July 1920, more than 75,000; April 1921, more than 80,000; February 1925, over 85,000 (thanks to Randy Cole, KN6W, and John Elwood, WW7P, for this ad information). The first four items can be used in conjunction with other

Over 85,000 Operators ^{use} the **VIBROPLEX**

Reg. Trade Marks:
Vibroplex Bug Lightning Bug



New
Improved
Vibroplex

Japanned Base,\$17
Nickel-Plated Base, 19

Because it transmits **STRONG** signals at any desired speed with less than **one third** of the labor required in key sending. Easy to learn. Simply press the lever—the **Vibroplex** does the rest.

Special Vibroplex Requires No Relay

Equipped with 3/16-inch contact points to break high current without use of relay. Radio operators say fills a long felt want \$25

No radio station complete without this Improved Vibroplex. Makes Sending Easy. Sent on receipt of price. Money order or registered mail. Order **NOW!**

THE VIBROPLEX CO., Inc., 825 Broadway, NEW YORK

Ad from QST for January 1926.

information to date certain plates with some assurance, and these numbers do track serial numbers fairly closely. Does this mean that serial numbers, rather than sales figures, were used? Note that the serial numbers overstate production due to the 20,000 numbers skipped by Albright in 1915. This is partially made up for by the D-numbered (Double Lever), B-numbered (No. 4 Blue Racer) and un-numbered keys outside of the regular numbering system. The last sales number (over 85,000 in February 1925) agrees only if we take it to mean way over (i.e., 90,000+ in 1925). Note that this same figure was used in the January 1926 *QST* at p. 68.

Early locations of the company, including Georgia: See Holly, and Holly's article "The Missing Link" in the *Old Timer's Bulletin*, vol. 32 no. 4 p. 41 (AWA, February 1992).

The B4 "trademark" plate was discussed in TVC no. 3 p. 16. The word "Vibroplex" was again registered as a trademark in 1955 (registration number 0600942).

Error on plates D1 - D5: Incorrect patent 763303, issued June 21 1904, is for a paper clip invented by Joseph A. Mayers. (Thanks to John Elwood, WW7P, for this information.)

Transverse D2 plate: Found on an Original, SN 89308, in my collection (see TVC no. 14, p. 22) and on a Model X, SN 93511, in the collection of Tony Rogozinski, N7BG. A transverse plate has not yet, to my knowledge, been found on a No. 6 (Lightning Bug), which is odd because this is the only bug shown in ads (in 1928 and 1929) with a transverse D-style plate. We refer here only to plates on bugs; the early Vibrokeyer can also be found with a transversely-oriented plate.

D1 plate: For my dating of the D1 plate, see the note under Martin Junior.

1905 Vibroplex without a number: Dave Pennes, WA3LKN, collection.

Fire in the forties: Letter to the author from the late collector/historian Louise Moreau, W3WRE, dated July 8 1989.

Sent them to the dump: Told to the author by the buyer, Peter Garsoe, in a conversation at the Maine shop in August 1990.

"Habit of changing numbers": "Key and Telegraph", Lou Moreau, W3WRE, ed., *Old Timer's Bulletin*, vol. 25 no. 2 p. 29 (AWA, September 1984).

Albright jumped to 50000: This series of numbers was the last (highest) used on the B4 plate; I hypothesize that this was Albright's doing upon taking over the company in 1915, before his new C1-type plate was introduced the following year.

4000 range: Commas (e.g., 4,000) are not used in the serial numbers.

Mobile plate numbering system: Letter to the author from S. Felton "Mitch" Mitchell Jr., WA4OSR, dated July 2 1996. This is not, strictly speaking, a "serial" numbering system. As this is written, the production numbers are over 101000, but many earlier numbers have yet to be used.

Numbers no longer unique: Albright had the right idea: He jumped ahead. In jumping back, as Garsoe and Mitchell did, the uniqueness of the numbers is lost.

Earliest Vibrokeyer: For what it's worth, SN 214872 (D6 plate) is the earliest Vibrokeyer serial number I've seen (for sale at the ARCA hamfest in Scottsdale, Arizona, in 1996); SN 210517 was reported to John Elwood, WW7P, in his survey.

Connector strip numbers: Numbers (i.e. lengths) 1 and 2 have been found on the Blue Racer and the Original; numbers 3 and 4 on the Lightning Bug and Champion. Information developed by Paul Bock, K4MSG, with the assistance of Randy Cole, KN6W, and Dave Holly, AA5MO. Paul surmises that the supplier in this era packaged the strips into bundles, and identified each bundle length by a number stamped into the top strip in the bundle. This explains the scarcity of numbered strips. Whether an assembler selected two numbered strips or not explains why some bugs have only one strip with a number.

Decals: An article on the decals appeared in TVC no. 3, p. 12.

Gold bug decal: A silver version has been reported by Russ Kleinman, WA5Y, and one appears on a 1920 Improved Model X in my collection (C3 plate, SN 75489).

Scarcity of decals: My continuing nameplate survey turned up twelve bug decals, and three Albright decals.

Development of the Semi-Automatic Key

Bunnell's steel lever key: Patent application filed October 15, 1880; Patent no. 237,808 issued February 15, 1881. See TVC no. 4 p. 7.

Glass arm is likely the ailment we know as carpal tunnel syndrome.

Date of Bunnell's introduction of the sideswiper: Dr. Joseph Jacobs, "J.H. Bunnell & Co., Past, Present, Future", paper presented at the Key and Telegraph Seminar of the 1994 annual Antique Wireless Association meeting, Rochester, N.Y.

Walter P. Phillips was born in Grafton, Mass., in 1846. He worked variously as a telegraph messenger and operator, and then as a newspaper editor. Eventually he "took charge of the United Press." *Telegraphers of Today* by John B. Taltavall (*Telegraph Age*, 1893).

Phillips Code: Various editions of this code have been published over the years, most recently by *Telegraph and Telephone Age* and by The Vibroplex Company, Inc. The books are eagerly sought by collectors.

Phillips provided backing: Late editions of *The Phillips Code* credited Phillips as a "joint inventor" of the Autoplex; this is doubtful, since he was not credited as such in the patent.

United Electrical Manufacturing Company: For the history of its beginnings, see Holly.

Operation of Autoplex: Perhaps the reason that this key, and the later mechanical "semi-automatic" keys, was not designed to generate dashes automatically was because it would be too complex. Unlike the single fixed-ratio dot (1 unit), the Morse Code (that is, the landline telegrapher's "American Morse" code) utilized three dashes: The dash (3 units, in many characters), the long dash (5 units, letter "L"), and the extra-long dash (7 units, cipher "0"). See, for example, *A Treatise on Telegraphy* (International Textbook Company, 1901), Vol 2, sec. 1, p. 5.

The story of the Coffe Mecograph is based on the article in TVC no. 15. "Not many sold": As this is written, Russ Kleinman's (WA5Y) 1904 Coffe vertical is the only one known. I base the 1904 date of Russ's Mecograph on the following: Considering the "patent pending" legend on the nameplate, this key would presumably

have been made during the pendency of the patent application, the two-year period between January 1904 and February 1906. Certainly the model was on the market prior to May 1904, when Martin warned in those first U.E.M. ads against "infringement." And considering that Bellows advertised a much-improved Mecograph in January 1905 (shown at TVC no. 15, p. 9), it is likely that the inferior Coffe vertical was not manufactured thereafter. These factors strongly suggest a manufacturing date in 1904.

A bug made in "1892" was shown in Dave Ingram's (K4TWJ) column in *CQ Magazine*, May 1991. In fact, the key was identified by Bill Holly, and noted at TVC no. 1 p. 7, as a 1906 Delany "Auto-Dot."

"Release" design bugs: The original (but not the production) design for the collectible Bunnell "Gold Bug" was also based on the release principle; see TVC no. 16, p. 4

Ads for the Autoplex: Also in May 1904, an ad similar to that shown here appeared in the *Commercial Telegrapher's Journal*; it is shown in Holly at page 5. U.E.M. apparently started advertising the Autoplex rather late; Holly describes that ad as the "First known ad for a Martin key."

1905 date for Vibroplex: See next chapter.

Original

Information summary: The production years, and especially the end year, are in many cases approximate. Variation in start/end year may also affect the plate type that one can expect to find on a model. "Patents" refers to a patent that directly affects the subject model.

Nameplates: According to my plate survey, the B1 plate is found exclusively on the Double Lever; the B2 plate (and most B3 plates) are found exclusively on the Model X. (The converse, however, is not true; these key models are found with other plates on them.)

The Company has promoted 1890 as its beginning for years. This is based on the founding of J.E. Albright's typewriter shop in that year. It was undoubtedly Albright himself who started this story; early *QST* Vibroplex ads include the phrase "Established 1890" (see, for example, the April 1925 *QST* ad in Appendix A). There is no evidence that Albright and Martin met before 1911. See the foreword to the first edition (1990); also see Holly, pgs. 11, 12. The 1890 date was fostered with a story in Company ads and brochures of the early 1980's that Martin placed a key on its side in 1890 "and our semi-automatic key was born"; there seems to be no basis in fact for this tale. The 1890 date is still advanced by writers (Holly, title page and p. 46) and the Company (see its ad in *QST*, November 1996, p. 201). This leads other writers claim that "Vibroplex has been in existence since 1890" and that "Horace Martin joined the company in 1904" (see John Dorr's (K1AR) "review" of the Straight Key in *CQ*, November 1996, p. 40). Both statements are, of course, false.

Introduction date: 1904 is used in Moreau, p. 23; the first edition of this book (1990), p. 28; Holly, p. 6; and *Keys, Keys, Keys* by Dave Ingram, K4TWJ, (CQ Communications, 1991) p. 2. Holly states (at p. 6) that the "First known ad for a Vibroplex" appeared in the June 1905 issue of the *Commercial Telegrapher's Journal*.

Quotes concerning the Vibroplex design are from the patent, no. 842,154.

"Others pending": The plural "others" on the second and third plates (A2 and A3) may have referred to patents in addition to the 1906 "Vibroplex" patent application which were applied for, but never granted; such information would not be found in a patent search, which lists only patents issued.

1921 "Improved" Vibroplex: See, for example, the September - December 1921 *The Railroad Telegrapher* ads. The April 1921 ad is for the earlier, non-improved, model. (May - August issues unavailable. Thanks to Lynn Burlingame, N7CFO, for copies of the ads.) In addition to the redesigned dash lever pivot, the Improved Vibroplex included "extra heavy contact points" which, for several months prior to the announcement, had been offered separately for \$1.50. Although "reduced size and weight" was also touted, a dubious improvement if it existed, there is no apparent difference between earlier keys and the Improved model in this regard. Reduced size was last mentioned in December 1921; thereafter, it was not listed as one of the features of the Improved Vibroplex. A "1923 Improved model" was first advertised in *The Railroad Telegrapher* in September 1922, but it was just the 1921 model updated by the advertising department.

Dash lever variations: These were pointed out by Bob Betts, N1KPR, and reported in TVC no. 6 at p. 6. The order in the photo caption (thin, thick, cast and Improved) seems to be the chronological order in which the variations appeared.

Colored bases: The first *QST* ad to mention optional red, green or blue bases appeared in the June 1929 issue at p. 86. A typical ad is shown in Appendix D. The last ad to mention colors in *QST* was in the July 1936 issue at p. 71. An unusual feature discovered on a few keys is the overpainting of one color option with another.

A blue Original in my collection shows, where it is chipped, that the blue was put over a red finish. A No. 4 Blue Racer with black over red over blue was reported by Fred Linn, W9NZT, in TVC no. 10 (p. 24). While this is interesting, a colored undercoat probably does not add to the collector value of a key.

Flat-topped damper: Original with SN 50000 is in the collection of Mike Bill, AA7NO. Serial numbers prior to this reached no higher than 26,154 (John Elwood, WW7P, serial number survey). All keys from SN 50000 up to at least SN 50445 (collection of Tony Rogozinski, N7BG) in my nameplate survey are Originals with this unusual damper. (One such key, SN 50041 in the collection of Russ Kleinman, WA5Y, has an A2 plate, undoubtedly recovered from old stock and used on this key.) I suspect that this new model and new number sequence was started by Albright when he acquired the company in 1915, and abandoned by the time he came up with his new nameplate, the type C1. Although the keys showing this feature appear in ads up to the November 1919 issue of *The Railroad Telegrapher*, they are all the same illustration of a key with an old B-style plate.

1939 pinned lever: Noted by Randy Cole, KN6W, and reported in TVC no. 3 at p. 8. All known bugs with this anachronistic feature (including other models) have serial numbers in the 115xxx range. Howard Motley, N4ND, theorizes that Martin, who left the Company in 1920 (Holly, p. 22), never properly assigned his 1923 patent to the Company; that he brought this to the Company's attention in the late 1930's when he prepared to make his Flash keys; and that the Company's nervous response was to briefly revert to the old pinned lever design.

Double Lever

1926 end date: The last ad to show the Double Lever appeared in the February 1925 issue of *The Railroad Telegrapher* at p. 32 (ad information courtesy of John Elwood, WW7P). However, the last Double Lever in my study has an early D3 plate on it (SN 96303, Dave Pennes WA3LKN collection). The "in use" ads state 85,000 in January 1926 and 100,000 in March 1926 (see *QST* ads), arguably placing this plate in early 1926. Also, a photo caption in the article "Simplifying Operating" in the May 1926 issue of *QST* (page 21) says that the Vibroplex is made "in either single or double lever type."

Norcross designs: Collector Russ Kleinman, WA5Y, has a Norcross model (SN 60100) with a thick base. Holly shows a thin-base model at Fig. 15 (appears to be SN 6014). Gene Greneker, K4MOG, has a late Norcross Double Lever (no serial number) with the full square frame.

Atlanta keys: One Atlanta key, a Double Lever with no serial number, is shown in the article "The Missing Link" by Bill Holly, in the Antique Wireless Association's *Old Timer's Bulletin*, February 1992, p. 41. The other known Atlanta key, also a Double Lever (SN 41144), is in the collection of Tony Rogozinski, N7BG.

Martin returned to New York in 1910: The year is an approximation; it may have been early 1911.

Model X

1911: See, for example, the June 1911 ad in *The Railroad Telegrapher* for the "1912 Model" shown at Holly, Fig. 18.

1923 end date: Perhaps the last ad to mention the Model X was that in the January 1923 *The Railroad Telegrapher* (p. 6), but very few appear to have been sold in the last few years of its life.

The contact arrangement of Martin's first approach to the problem (patent 1,042,457) was reflected in, if not to say copied by, John Ghegan's first approach to the Bunnell Gold Bug, patent 1,140,151 issued in 1915. See TVC no. 16.

Duplex contact key: Dennis Goacher, G3LLZ, built a model of this key from the patent drawings contained in the first edition of this book. See *Morsum Magnificat*, no. 42 (October 1995), p. 26.

Only key with B2 and B3 plate: One exception, a B3-plate Original in the collection of Lynn Burlingame, N7CFO, has been reported, but the serial number (20354) is so far above the typical numbers (10000 - 11000 series) that I consider it an anachronism, the use of an old nameplate at a later time.

1919 round pendulum: This appears beginning with late C2 plates in my survey. The ad illustrations switched from showing the early to the late style in mid-1919; compare the June 1919 (old style Model X) and August 1919 (improved style) issues of *The Railroad Telegrapher*. It was not called the "Improved" model until the October 1919 ad.

Feet mounting: The change from through-holes to blind holes seems to be around SN 25500. This change may have been instituted by Albright upon taking over the Company, but that's conjecture.

"One collector described": Randy Cole, KN6W, in a letter to the author dated May 12 1996.

The variant with the stamped, large square pendulum is in Tony Rogozinski's (N7BG) collection; it is serial number 12250 and carries the type B4 (trademark) nameplate. It is unlike other early models made before or after (in terms of serial numbers).

Very few sold after 1920: According to my nameplate survey, a Model X with a D-style plate is rare.

Albright Bugs

"Albright bug": Moreau states (at p. 35) that such bugs were also called a "legal bug" by their operators.

ATOZ: An ATOZ copy of an Original with no plate or an Albright plate is most readily identified by the rounded ends of the horizontal frame arms.

Albright plates: Moreau, p. 34, discusses the plates and shows a first style "Special No. 2626" at fig. 4.8; Holly shows first-style plates at fig. 28 (Special No. 2029) and fig. 30 (Special No. 622 W.U.T.CO.). A first-style plate bearing "W.U.T.CO. No. 1414" is in my collection on a copy of an early (about 1906) Vibroplex. A second-style "plain" (no "special," no "W.U.T.CO.") number plate No. 510 on a later, probably ATOZ, copy in my collection has a "C" stamped to the right of the number (see photo); the meaning of the letter is unknown but may identify the bug owner's employee. This Albright plate and serial number information is very preliminary; the subject would make an interesting research project for a collector.

No. 4, Blue Racer

Summer of 1914: The earliest of the No. 4 (Blue Racer) keys carry the type B4 nameplate (the "trademark plate"), which I believe was used from about 1913 to 1916. (This plate was the subject of an article in TVC no. 3 p. 16). To narrow the date further, Holly finds the first No. 4 ad to have appeared in August 1914 (Holly, fig. 32). And since a March 1914 ad proclaims the Model X to be their "latest model" (Holly, fig. 22), the No. 4 was apparently introduced between March and August of 1914. The model was probably produced continuously from its inception to its demise, contrary to a conjecture in Holly (p. 49) that it "may have been out of production 1932 - 1941." Several Blue Racers have been found bearing early, mid and late D3 plates (1925 - 1939).

The end date of 1966 is an approximation, based on serial numbers and dates reported in my survey.

Blue Racer name: A January 1921 ad in *The Railroad Telegrapher* shows the "No. 4 Vibroplex (Famous Blue Racer)." Holly states (p. 49) that the No. 4 was "Named Blue Racer by 1920." As the Double Lever initially used a "D" serial number, the use of the "B" in the first No. 4 serial numbers suggests that the name "Blue Racer" may have been planned for the No. 4 from its beginning.

Blue base for first five years: Ads in *The Railroad Telegrapher* changed from noting a blue base in October 1919 to a black base in November 1919. Colored bases are offered in the second catalog (dating from somewhere within 1929 - 1935) mentioned under the Martin Junior notes (but is not mentioned in the earlier catalog).

Interim style: SN 117732, Dave Pennes WA3LKN collection; SN 134693, author's collection.

L type damper: The change seems to have been made between SN 143684 and SN 145206; John Elwood's (WW7P) dating study places this in 1945. A Company form letter in my collection from W.W. Albright dated June 16 1947 indicates that starting some time before that date the Blue Racer main and damper frames were made from "streamlined high pressure castings" (referring to the new, smaller Original style items).

Base options: It has been reported that the No. 4 on a 3-inch base was a "special order" option.

Upright

1917: John Elwood, WW7P, reports that the first mention of the Upright was in a "new product" type of article the November 1917 issue of *Electrical Experimenter*, p. 458 (article reproduced from copy provided by WW7P). The Uprights in my survey show up bearing late C1 and C2 plates.

1919: Moreau says that the Upright was discontinued in 1925 (Moreau, p. 25), but the few in my plate survey are clustered around the time of their introduction. This suggests that few, if any, were made after 1919. I have based my end date on the last Upright ad, which according to both John Elwood, WW7P, and Holly appeared in the February 1919 issue of *Telegraph and Telephone Age* (shown at Holly, fig. 34).

Vibroplex acquired Coffe patent: Holly says this occurred in October 1913, and the price was \$9,000 (Holly, p. 13).

Styles: The two styles on the cast plate appear intermingled in terms of serial numbers; the one with the cast-in damper posts is deemed the first based on its appearance in the ads, and particularly in the first article

reproduced here. I have not seen the third, or brass plate, style; the description is based on comments by collector Gil Schlehman, K9WDY.

Moreau shows a left-handed second-style Upright in her "Key and Telegraph" column in the *Old Timer's Bulletin*, vol. 30 no. 1 p. 27 (AWA, May 1989). The only left-handed Upright known, it is now in the collection of Gil Schlehman, K9WDY.

Midget

At least six Midgets are known to exist. Their serial numbers date them to 1918 and 1919, per John Elwood's (WW7P) dating guide, and place them in the C2 and C3 plate ranges.

October 1919 ad: The price of the Midget on a No. 4 base was \$15, the same as the price of the standard (nickel-plated) model. This add is odd in a couple of respects. Although the Midget appeared in every ad for about two years, this seems to be the only one in which this option is mentioned, and in which the Midget was not illustrated. It is also the only one in which the word "nickel" is misspelled as "nickle" under every key. Did a new copy writer fill in that month? And speaking of misspellings, "Vibroplex" appears in large letters in the October 1922 ad in *The Railroad Telegrapher*, p. 288.

No. 6, Lightning Bug

Transverse plate: See note under Nameplates, Serial Numbers and Decals, above.

1927: Moreau places the arrival of the No. 6 coincident with Martin's 1923 improvement patent (Moreau, p. 25); this is the date I used in the first edition. But we now know that the No. 6 appeared some time after the appearance of the D3 plate; no Lightning Bugs bearing an 825 Broadway address (D1, D2 plates) are known. Holly finds the first No. 6 ad in the *Railroad Telegrapher* for June 1927, and that date seems appropriate. It was first mentioned in *QST* in the February 1928 ad (p. 59).

Beige base: Found on Originals, Lightning Bugs and Champions with a late D7 nameplate.

Brown base: This was a brief experiment in Maine around 1979; the keys on which this finish appears carry late D7 and early (4000-series SN) D8 plates.

1939 pinned-lever variant: Randy Cole, KN6W, identified this for TVC no. 3, cover and p. 8.

1979: End of production. At least one Lightning Bug, SN 4147 (see J-36 notes below), bears the Maine plate, which shows they were made at least as late as 1979. Since the summary is labeled "produced," that is the year I use as the end date. The usual conundrum in dating keys is whether to go by the advertising year or the production year. In this case, the inventory year adds confusion, because these and other Lightning Bugs with the old D7 plate were sold from Maine well into the 1980's. Mike Scott, KA1PJM, told me that he visited the Maine shop in February 1988, and at that time the Company had four Lightning Bugs remaining for sale; the plate type on these is unknown.

Martin Junior

Throughout this book, I have complied with standard collector practice in referring to this model as the "Martin Junior." I believe, however, that the model should properly be called simply the "Junior." The earliest Vibroplex ads refer to the "Martin Vibroplex." Later ads refer to the "Martin 'Midget'" (see *The Railroad Telegrapher*, October 1918). In these applications, "Martin" was used as a reference to the maker, and not as part of the model name. As Holly notes (at p. 28), "It became just Junior in the April 1937 *QST* and the Vibroplex Junior in the September 1939 *QST*." I submit that these were not a change of name, merely different ways of referring to the model known as the "Junior." But old habits die hard.

First ads: It appeared in *QST* in the December 1934 issue (shown here). Holly (p. 28) found the first ad for this model to have run in the February 1934 issue of *The Railroad Telegrapher*.

1921: The appearance of this model and the D1 plate coincide: Eight of the first nine keys with the D1 plate in my survey are "Juniors," and thus the key and plate must be dated together. The Company moved to 825 Broadway in 1920; the first 825 Broadway ad appeared in the July 1920 issue of *The Railroad Telegrapher*. But all Juniors have the improved lever pivot, and the improved lever patent was applied for in December 1921; the one-year protection period ran from December 1920. So a very late 1920 date (assuming the Company paid attention to patent law) is possible. However, the April 1921 issue of *The Railroad Telegrapher* does not mention the

improvement; the September 1921 issue does. So a 1921 date for the Junior and the D1 plate seems most probable.

Company catalogs: The small Vibroplex catalogs are not dated. However, the addresses on the two I have referred to are 825 Broadway and 796 Fulton Street. The earlier one includes a Double Lever key; the later one, a No. 6 (Lightning Bug) and the colored base options. This places the older catalog at about 1925 - 1926, and the later one at about 1929 - 1935. Both refer to the small-base Original option, but it is crossed out in the later catalog, suggesting that it was probably only available from about 1925 to the end of the decade. (Earlier catalog copy courtesy of Derek Cohn, WBØTUA.) For more information on these and other catalogs, see TVC 23 p. 12.

The Military Bug (J-36)

J-36 nomenclature: Starting about 1920, the U.S. Signal Corps began to identify their telegraph keys under the J-series numbering system. These ultimately ranged from J-1 to J-51, though a few numbers appear not to have been used. All of the semi-automatic keys irrespective of maker and regardless of differences in detail (the keys are essentially commercial items with a special plate) fall under the J-36 identifier.

Other providers of J-36 keys to the Signal Corps include, in addition to The Vibroplex Company, the Brooklyn Metal Stamping Company, J.H. Bunnell & Co., Jas. Clark Jr. Electric Co. (maker of Horace Martin's "Rotoplex") and Lionel. For a brief history of military nomenclature, see TVC no. 4 p. 15. For details on all of the Signal Corps keys, see Larry Nutting's *J-Series Telegraph Keys of the U.S. Army Signal Corps* (Nutting, 1993).

1935 - 1943: These are dates which I have personally confirmed. Moreau and Willer, in "Foreign and Military Telegraph Keys" (*The AWA Review*, vol. 3), show a June 1930 J-36 by Brooklyn Metal Stamping Co. (Fig. 38). Larry Nutting's book (see above note) suggests that J-36's may have been made as late as 1951 (at p. 20). Here is an interesting research project for a collector.

Navy Champion: SN 176681; information courtesy of Derek Cohn, WBØTUA. The Navy nomenclature for its semi-automatic keys was Cxx-26009, where the "xx" is a contractor code; see TVC no. 4 p. 15. For a complete listing of Navy contractors and codes, see "Electronic Military Equipment, Naval Equipment Manufacturers" by F.W. Chesson in *The AWA Review*, Volume 7 (AWA, 1992). While it does not cover keys to any significant degree, an interesting resource on Navy communications equipment is Captain L.S. Howeth's *History of Communications-Electronics in the United States Navy* (U.S. Government Printing Office, 1963).

Gray-based Champions: SN 239151, 833 Broadway, in the author's collection. The bottom ink stamping reads "??? 1N 5805-312-2750 / KEY, TELEGRAPH / VIBROPLEX CO. INC. 'CHAMPION' / 1 EA. / ???T N126-10052A" (? = unreadable character).

Deluxe Lightning Bugs: SN 4147, formerly in the author's collection. On the left side is scratched "RM 116." This key was obtained from an Air Force communications specialist then billeted at Fort Devens (Ayer, Mass.). After his training at Keesler, he had been advised to "take the key, or we'll just throw it out." The training school also had a few straight (hand) keys, but they were "just for show," according to the specialist.

Standard Original in 1991: Information courtesy of George Rancourt. The label on the unopened key box from 98 Elm Street, Portland, Maine, reads "5805-00-160-1236 / CAGF/PRIME 74408 PN/PRIME ORIGINAL-STANDARD / KEY-TELEGRAPH / 1 EA. / DLA 900-91-h-J854 / C 3/91".

Zephyr

Production dates are from my nameplate survey. The Zephyr was first offered just before the Fulton Street plate changed from the D3 to the D4 type.

Prices are from a 1947 *QST* Harrison Radio ad.

Black japan finish: As reported by collector Dave Pennes, WA3LKN.

Modification to a paddle: "Custom-Make Your Key Paddle - the iambic Zephyr," by Jim Barnett, W6JB, *73 Magazine*, August 1978, p. 150. In his article, written twenty years after the Zephyr went out of production, Jim states that "It cost me nothing to make this modification..." (except, of course, the loss of a collectible bug).

Champion

1939: The appearance of the Champion in 1939 is based on its position in the date of my nameplate survey (immediately after the Zephyr), and on the appearance of its first ad in *QST* for November 1939 (p. 114).

1979: The last Champions in my survey had D8 plates, SN 4185 and 4954. This is within the briefly-

used early Maine serial number series. A Tufts ad showing the Champion appeared in the November 1980 issue of *73 Magazine*, p. 163, but this could have been old stock or an old ad copy. This demonstrates the difficulty of determining a production end date; a Company ad would have been more convincing.

For radio use only: See the Vibroplex ad at p. H-77 in the 1944 (tenth) edition of *Radio's Master* (United Catalog Publishers, Inc.) (Thanks to S.E. Watkins, K4OWN, for sending me a copy of this ad.)

Old stock Champions. Brad Wilson, KA1GDG, bought a new Champion from Maine in early 1985; it was a gray-based left-handed model with a D7 plate, SN 388204. Mike Scott, KA1PJN, told me that he visited the Maine shop in February, 1988, and the Company had eleven Champions remaining for sale (plate type unknown).

Brown base: This was a brief experiment in Maine around 1979. Randy Cole (KN6W) calls this darker-than-beige brown finish "sienna brown," and reports it on a Champion (D8 plate, SN 4946) and a Lightning Bug (D7 plate, SN 387395).

Pinned-lever variant in 1939: Howard Motley, N4ND, reported that SN 115225 has this feature.

The Deluxe Models

D4 plate: The earliest De Luxe keys I have seen have early D4 type nameplates, and serial numbers above 114,000. Much earlier De Luxe models have been claimed, but I believe such claims are based either on a misidentification of nickel for chrome, or on a replated key, or on a misunderstanding of the term (the optional nickel plating did not produce a "De Luxe" key). Any claim of a 1925-era key, for example, as being a De Luxe model is unquestionably in error. The critical distinguishing factor for the De Luxe is the jewel bearings, and for this reason the pivot bearings must be inspected to positively identify the model.

Spelling: Changed to "DeLuxe" in the 1940's, and to the current "Deluxe" beginning in the early 1970's.

First *QST* ad: The 1939 - 1940 ad series featuring the Champion was changed just slightly to mention the "1940 De luxe models" in the March 1940 issue, p. 114.

Battleship gray base: On December 4 1941, auto makers were ordered to cease using chrome, see *Ford: 1903 to 1984* by Lewis, McCarville and Sorensen (NY: Beekman House, 1983), p. 111. The same or a similar order undoubtedly applied to all industries at that time, including telegraph key makers. The gray base of the DeLuxe is noted in the ad in the 1944 (tenth) edition of *Radio's Master* (United Catalog Publishers, Inc.), p. H-77.

1939 pinned lever: Noted by Randy Cole, KN6W, and reported in TVC no. 3 at p. 8.

Patent 2,187,351

Reference to "spring 74" on the second page of the reproduced patent and to "springs 25" on the third page reflect errors appearing in the original document. There may be other original errors in this patent (as well as in the other patents reproduced in this book).

Presentation

Ad: The ad shown was the first ad for the Presentation to appear in *QST* magazine (November 1948).

1995 new owner: S. Felton "Mitch" Mitchell, Jr., WA4OSR.

Vibrokeyer

1960 date: Since the "Vibro-Keyer" first appeared in a Company ad in the 1960 edition of the ARRL's *Amateur Radio Handbook*, and its first *QST* ad appeared in the January 1960 issue (p. 140), it is likely (considering advertising lead times) that this model was available in late 1959. And as John Elwood, WW7P, pointed out in a letter to me, the *QST* issue would likely have been in the hands of subscribers in December 1959. But John adds: "I go by the date of the first ad." I will, too.

Stop screw used to fill hole: Ads through the seventies show a non-functional screw and jam nut in that position. See, for example, the *QST* and *CQ* reviews (referenced below), or ads at *CQ* for April 1961, p. 119, or *QST* for June 1960, p. 138, or the ARRL *Handbook* for 1961 at page 71. After the move to Maine, ads showed a reversed (flopped) image of the right side of the key to hide the superfluous screw. But the mislocated wire terminals and finger pieces give it away. See, for example, *73* magazine for September 1979 (p. 109) or January 1980 (p. 172), or *QST* for July 1979 (p. 173; this ad, by the way, is the first ad from the Maine address).

Base color: Review, *QST*, February 1960, p. 47 (mentioned gray base). Review, *CQ*, February 1960, p. 74 (mentioned beige base). Special gray finish: For example, see Harrison ads in *QST* for March 1960 (p. 143) and April 1961 (p. 147). A green finish has been reported on two Vibrokeyers; at least one of these dates to 1960.

Quote re parts: Also see June 1960 *QST* ad (p. 138).

DeLuxe model: See April 1961 *CQ* ad, p. 120. But beige-based models with red finger pieces and the red plastic "jewel" atop the frame can be found into the mid-60's; for example, SN 270015 (D7 plate) in my collection.

Plate orientation: A right-facing plate is shown at Holly, fig. 64.

Iambic

Extra hole in frame arm: See, for example, February 1980 *QST*, p. 140.

Brass Racer

Hills FYO: Although the patent drawing shows two springs, the single-lever paddle as actually made has a single spring. The iambic Hills FYO uses a single spring looped around a post at the rear of the base. The iambic variety of the FYO was never the subject of a separate patent. Hills' patent (3,166,638) was filed January 30 1962 and issued on January 19 1965. Hills' patent was never owned by Vibroplex. The FYO paddle was reviewed in both *CQ* and *QST* on October 1962. For a rather complete story of the FYO and of Bencher's entry into the market, see Bob Locher's (W9KNI) article in *Morsum Magnificat* no. 25 (autumn 1992) at page 27.

The first commercial iambic paddle seems to be the "Nikey," offered by Nicholas Lefor in the January 1962 issue of *QST* (p. 160).

HAMCO, of Eureka, California, made their FYO-style paddle in three models: The Scotia (standard brass finish), the Trinidad (engine-turned finish), and the Carson (hand-polished brass). See the product review in the December 1978 issue of *QST* at page 33.

Other FYO copies: In addition to those companies named in this chapter, Teletek offered standard and deluxe iambic models in 1975 (see *hr magazine*, July 1975, p. 91).

EK-1: The Curtis 8044 chip was the subject of an article, "CW on a Chip," in the December 1983 issue of *QST* magazine. (Thanks to Chuck Grey, ND7K, for this reference.) While the EK-1 speed may be varied, there is no external adjustment for weight control. The EK-1 was last offered in late 1999.

Square Brass Racer: The customer was Chuck Adams, K5FO; letter to the author from S. Felton "Mitch" Mitchell, WA4OSR, dated July 2 1996. Adams' key carries SN 100901. The second Square Brass Racer, SN 101000, was elaborately engraved and gold plated by Smokey Gaines, KN6AE, as Mitchell's personal key.

Straight Key

The "chief architects" of the Straight Key were Raymond Cagle, W4UJZ, and Mitch Mitchell, WA4OSR, "with valuable suggestions from Richard Christian, WA4CVP." From a letter to the author from S. Felton "Mitch" Mitchell, WA4OSR, dated July 2 1996.

The first ads for the Straight Key appeared in the November 1996 issues of *QST* (p. 201) and *CQ* (p. 56).

Information on serial numbers is from a letter to the author from S. Felton "Mitch" Mitchell Jr., WA4OSR, dated July 2 1996.

In the ad noted above, the Company answered the questions posed in the text. It called the Straight Key "The latest Vibroplex Collectable" and suggested that you "Get yours now for a low serial number."

Other Martin Keys

For historical information on Martin Research and Manufacturing, see Holly, pp. 28 - 32.

A photograph of model 5-47 is shown at Holly, fig. 51.

Amateur Flash Key (Bunnell 5-46) similar to Midget: Compare Holly figs. 35 and 50.

The quote on the Piggy-Back key is from a company ad (courtesy of John Elwood, WW7P).

Rotoplex options, and Navy information, from a company flyer (copy from the L.R. Moreau Historical Library, courtesy of John Elwood, WW7P).

The Collectible Keys

The last model found... : John Elwood, WW7P, finally found a Zephyr in 1991 at the Ft. Tuthill hamfest in Flagstaff, Arizona, to complete his collection.

Quote from Randy Cole, KN6W: From an Internet message to the Boatanchors group, 4 Aug 1995.

Oak carrying case: Ad in *The Railroad Telegrapher*, June 1911, shown at Holly, fig. 18.

Morocco case: Morocco is a goatskin leather tanned with sumac. Robert Morrison, AD4PI, obtained a 1906 Vibroplex with a "leatherette" covered carrying case; the case was marked 1909 and 1911 by previous owners. See his article in TVC no. 17.

Wedges: Bug wedges were not necessary until 1904. Earlier items that appear to be bug wedges are actually landline telegraph spring-jack wedges. The landline loop peg (used with a button switch) is somewhat similar. Collector Dave Pennes, WA3LKN, reports an "Albright" wedge in his collection.

Phillips Code: Vibroplex bought the copyright from *Telegraph and Telephone Age* in December 1950, according to Holly (at p. 45).

APPENDIX A: Addresses of the Company

Date of Martin's return to New York from Georgia: He was in Georgia in 1910, see Holly's article "The Missing Link" in the *Old Timer's Bulletin*, vol. 32 no. 4 p. 41 (AWA, February 1992). By February 1911, Albright was carrying Martin's keys in New York, see Holly, p. 11.

1925 *QST* ads: The first Vibroplex ad appeared in *QST* in February 1925 (not April, as stated in the April 1964 issue of *QST* at p. 79); this ad is shown in Holly, fig. 39. The Fulton Street address appeared only in the April and May 1925 ads (thanks to John Elwood, WW7P, for this information).

APPENDIX B: Patent List and Index

Patent numbers are commonly used to date antiques; the object cannot have been made before the latest number it carries. A list of the first number issued each year from 1844 to 1941 is given in TVC no. 9 at p. 16.

APPENDIX C: Nameplate Legends

On the early plates, the vertical alignment may vary. For example, on most A2 plates the patent numbers are directly above and below each other, but I have seen a couple with the lower number shifted slightly (about one digit width) to the left. This probably reflects nothing more than imperfect stamping-machine set-up.

APPENDIX D: Base Finishes

Base finishes: I have also seen a dark maroon finish, with the usual pinstripes, on an early 1920's Original model. This bug (D2 plate, SN 89755) was stamped into the top of the base as belonging to Western Union, and had a W.U.T.CO. wedge. The finish appeared authentic, and was possibly a custom order.

Color options: Although the first ad to mention optional red, green or blue bases appeared in *QST* for June 1929 at p. 86 (showing the Original and No. 6), at least the blue color of the No. 4 may have been available for other keys on special order some time earlier. An Original in my collection dating from 1918 - 1919 (SN 65495, type C2 plate) has a blue (over black) base finish that appears genuine. The color option on the Blue Racer is stated in the 1927 - 1935 Company catalog (see Martin Junior notes). The last ad to mention colors in *QST* was in the July 1936 issue at p. 71.

Beige bugs: Original, Lightning Bug and Champion models are known. Although most (if not all) of these carry very late D7 New York plates, it appears that they were painted, assembled in and sold from Maine.

Brown base: This was a brief experiment in Maine around 1979, and apparently followed the beige-based bugs. This rare color is darker than the beige finish, and might be described by some as tan, light brown or reddish brown. Randy Cole (KN6W) calls this finish "sienna brown," and reports it on a Lightning Bug (SN 387395) with a glued-on D7 plate (which indicates Maine assembly), and a Champion (D8 plate, SN 4946).

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